No. 47.

Field Book
of
Willis Linn Jepson

If lost finder will receive
five Dollars Reward.

11 Rossmoor Road
Berkeley,
— 1928 —

Apr. 28, 1928. Purisima Hills, c. 600 ft. Santa Barbara Co.

No. 12,654. Trifolium albopurpureum T. & G.

No. 12,655. Lupinus ~~bicolor Lindl.~~ = L. micranthus, Dougl., ~~not L. bicolor.~~

No. 12,656. Plagiobothrys nothofulvus Gray.

No. 12,657. Chorizanthe membranacea Benth.

No. 12,658. Microseris heterocarpa

No. 12,659. Salvia columbariae Bth.

No. 12,660. Lagophylla congesta Greene

No. 12,661. Lupinus nanus Dougl. var. apricus C. P. Sm.

(Discarded, insect damaged)
No. 12,662. Layia

Rays egg-yellow, with white tips. Sandy low hills, Orcutt.

Bicknell sta., Santa Barbara Co., Apr. 28, 1928, 420 ft.

262

No. 12,663. Linaria canadensis Dum. var. texana Pers. Sandy fields.

No. 12,664. Amsinckia spectabilis F. & M. var. microcarpa (Greene). Sandy fields.

No. 12,665. Orthotheca contorta Dougl. Sandy fields.

No. 12,666. Spergula arvensis L. Sandy fields.

No. 12,667. Orthocarpus purpurascens Bth. Sandy fields.

No. 12,668. Eschscholtzia californica ~~Watts~~ Cham. Sandy fields

No. 12,669. Prunus fasciculata Gray, var. punctata Jepson. Sandy hills. A very spiny densely interlaced bush 4 to 5 ft. h. and 8 ft. broad. Petals erect! Stamens 12. Petals cuneate-orbicular, clawed shortly. This is different, in appearance & in fls. from anything seen hitherto.

No. 12,670. Malacothrix glabrata Flowers egg-yellow. An inhabitant of very sandy places always.

263

No. 12,671. Plantago Sandy hills. (Discarded, insect damaged)

No. 12,672. Chaenactis Sandy hills. Fls. clear yellow.

No. 12,673. Astragalus douglasii Gray. Stems several from the root-crown, decumbent. Corollas white!! Sandy hills.

No. 12,674. Eryptanthe clevelandii Greene. var. florosa Jtn. Sandy hills.

No. 12,675. Microseris lindleyi Sandy hills.

No. 12,676. Collinsia bartsiaefolia Bth. Sandy hills.

No. 12,677. Microseris linearifolia Lindley. Sandy hills.

No. 12,678. Cryptanthe clevelandii Greene. Sandy hills.

No. 12,679. Chorizanthe Watsonii T. & G. Prostrate. Sandy hills.

No. 12,680. Potentilla lindleyi Greene. =Horkelia cuneata ssp. typica Lindl.

Petals narrow-obovate. Stamens with deltoid-lanceolate filaments, the anthers closely approximate about styles when flowers first in anthesis, the slits facing (cont. p. 266).

No. 12,681. Croton californicus Müll. Arg. Stems several from the root-crown, rooting and spreading in such a way that the decumbent stems make a low rough mat. Sandy hills.

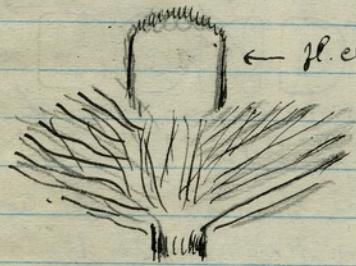
circular
There "mats" are small, 1 to 2 ft. diameter.

No. 12,682. Lupinus albifrons Bth. Rounded bush 3 1/2 ft.

4 1/2 ft. h.; corollas blue; banner with light center. Sandy hills.

No. 12,683. Cirsium

Stem erect, branching above the base, 2 1/2 to 3 ft. high. Basal leaves taken and tips of fl. branches. The pressed heads are entirely misleading. The head as a whole is rather large, that is to say the involucre is broad and hemispheric,



but young or old the flower cluster is a compact cylinder arising out of the middle of it. The flower disk is quite close when young,

266

4- spreads a little only in age. It never spreads in the way that would be indicated by the dried specimen.

-Cont. from p. 264. No. 12,680. inward and dehiscing inward, the backs of the anthers closely covered with minute globular papillae or glandular cells. Petals rotate in anthesis, the calyx-lobes reflexed.

-Cont. from p. 259.] point- Yucca brevifolia appears*; I suspect this may be its southernmost station. At Twenty-nine Palms we camp overnight. Pluchea sericea Cov. occurs in the springy spots here. So do Populus Fremontii Wats.; also Prosopis juliflora DC. var. glandulosa CKll. There are 18 palms here now; I verified the count.

* See p. 206.

(Discarded, insect damaged)
No. 12,684. Chaenactis

267

c. 200 ft. Price Canon, San Luis Ob. Co.

No. 12,685. Lupinus nanus Dougl.

c. 250 ft: Sandy field near Edna.

No. 12,686. Matricaria suaveolens Buch. matricarioides (Less.) Porter

Beaten ground, La Cuesta Pass, Santa Lucia Mountains.

No. 12,687. Sambucus

near Kings City, w. bank of Salinas River.

No. 12,688. Matricaria suaveolens Buch. matricarioides (Less.) Porter

Beaten ground, Salinas.

No. 12,689. Microseris douglasii

Tulare Hill, s. Santa Clara Valley, 275 ft.

No. 12,690. Achyrachaena mollis Sch. with 12,689.

No. 12,691. Orthocarpus densiflorus Bth. with 12,689.

No. 12,692. Baeria

with 12,689.

Tularo Hill, cen. Santa Clara Valley, Santa Clara Co. April 29, 1928.
400 ft.

268

No. 12,693. Allium
with 12,689.

No. 12,694. Layia platyglossa (F&M) Gray
ssp. campestris Keck
L. gaillardioides (H&A) DC.
Det: B. Baldwin; S. J. Bainbridge 1938
Rays yellow, with very large white tips. with 12,689.

No. 12,695. Collinsia bicolor Bth.
with 12,689.

No. 12,696. = Tritelia
Brodiaea laxa
with 12,689.

No. 12,697. Linanthus ambiguus
Rattan Greene Cor. deep blue with dark purple throat. with 12,689.
Colonies, small ones, on the rocky portion of the hillslope. = Linanthus rattanii Gray.

No. 12,698. Convolvulus subacaulis Greene with 12,689.

No. 12,699. Agoseris heterophylla
with 12,689.

No. 12,700. Cryptanthe
with 12,689.

269

No. 12,701. Platystemon californicus Benth.
with 12,689. This dry and more or less rocky slope is a strange habitat for Creamy Cups.

No. 12,702. Poa scabrella (Thurb.) Benth. ex Vasey
This grass grew on the slope with 12,689.

No. 12,703. Poa scabrella (Thurb.) Benth. ex Vasey
This grass grew on the slope with 12,689.

No. 12,704. Grindelia
with 12,689.

– Cont. from p. 258.] Quercus lobata Née is fairly common in the valleys about Triunfo (Russel Valley) and the valleys about Newbury Park.

[Vermilion Valley, S. Fork San Joaquin, cont. from p. 450 seq.]

– Cont. from p. 450 seq. In this broken country I note the following: Arctostaphyloa patula Greene; Prunus emarginata Hook.; Pentstemon (blue), * same as no. 13,328; Rosa (no. 13,221) all over this country; Ceanothus cordulatus Kell; Quercus Kelloggii Newb.; Pinus Jeffreyi Murr.; Gayophytum diffusum T. & G., very abundant all over this country, especially in sandy flats. Along Moro Creek, Alnus tenuifolia Nutt. forms a thick screen on the banks. Also Pinus Murrayana on the flats and P. Jeffreyi.

– One of the packers, I notice, stakes his mule by a leg, which is a good shift and might prevent burning by the rope. As in my own case I notice that all this dry goods are in bags with drawstrings. We see a good many camping parties in these mountains and I am impelled to another observation that in selecting individuals for one's party persons delightful socially are to be weighed with [rigidly] much more circumspection and distrust than other persons.

* heterophyllus Fyke

– I called last night at the Parrish's on Scenic Ave. Mr. Parish, who rallied a bit for a few weeks, is again very low. He probably will not last long but is serene in mind, perfectly clear mentally, and mentally normal in every way. He makes his dry jokes as usual. Having no appetite, the nurse tries to tempt [with] him various foods and finally says: Well, what would you like? I'd like some whale meat, he replies, knowing this would amuse the nurse and it does. The strain of the long vigil is telling on Mrs. Parish. – 1 May, 1928.

See p. 342 seq. see p. 159 ante.

Hunters Point, San Francisco

May 4, 1928

No. 12,705. Sidalcea malvaeflora Gray

The ♂ fls. are scarce at this time. Grassy hillslopes.

No. 12,706. Sidalcea malvaeflora Gray.

♀, the fls. range from quite small to quite large, though not so large as the ♂.

No. 12,707. Stachys ajugoides Bth.

Gully in dry hillside

No. 12,708. Hordeum brachyantherum Nevskii

This grass grew in heavy tufts on a hillslope.

No. 12,709. Lupinus nanus Dougl.

No. 12,710. Juncus tenuis Willd. var. congesta Engelm.

Springy spot but now dry.

Spm. discarded

No. 12,711. Microseris douglasii

Dry sun-cracked hills.

(DC. 1Sch.-Bip. subsp. tenella (Gray) Chambers (det. K. Chambers, 1956)

No. 12,712. Poa scabrella (Thurb.) Benth. (Det. Beecher Crampton, 1973)

This grass grew on the very dry hills.

No. 12,713. Lotus subpinnatus Lag.

This seemed "diseased", but may not be.

No. 12,714. Astragalus nigrescens Nutt. (= A. gambelianus Sheld.). Dry hills.

No. 12,715. Lotus subpinnatus Lag.

With 12,713.

No. 12,716. Evax caulescens

Dry hills.

No. 12,717. Trifolium fucatum Lindl. Moist hillslopes in spots.

No. 12,718. Pentachaeta alsinoides Greene This slender composite is hidden in the grass and it would not have been found had I not been down on my knees digging up other things.

No. 12,719. Festuca megalura Nutt.

This grass grew on the dry hills

No. 12,720. Baeria

Achenes rather thickly (but still discretely) covered with minute hard sharp points. Receptacle with minute short truncate stubs of pedicels. All over the hills on the moister northerly slopes.

No. 12,721. Orthocarpus densiflorus Bth.

grassy hills.

No. 12,722. Agoseris heterophylla

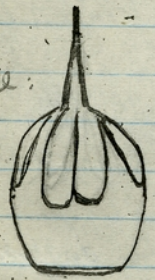
grassy hills.

No. 12.723. Allium

Common on the dry hills, n. slopes. Inner per.-segments much narrower than the outer, approximate by their

edges so as form a sort of tube about the essential organs, their acute tips spreading. Outer per.-segments spreading. These corollas have a very bright- and gaudy corolla which is best described, perhaps, as pink-lavender.

Pistil:



greenish-white ovary with purple crests. Style white, thick below, tapering gradually but regularly to a sharp point at apex.

I am showing the one pair of crests which faces me as I look at it, (the one pair, very very low and flattish, with the usual crease down the middle of it- longitudinally.

No. 12.724. Festuca reflexa Buckl.
This grass grew on the dry hills.

No. 12.725. Eriogonum nudum var. pubiflorum
Stems arising from a branched, prostrate woody root-crown. Dry hills. Only a few plants yet in fl.

No. 12.726. Agrostis microphylla Steud.
(Det. Beecher Crampton, Mar. 22, 1932)
This grass grew in a moist place.

No. 12.727. Microseris douglasii
Dry hills. tenella

No. 12.728. Lomatium caruifolium
C. & R. Dry hills

No. 12.729. Plantago
Dry grassy hills.

No. 12.730. Brodiaea terrestris
Outer perianth segments narrower than the inner. Stamens (with anthers) are opposite the broad inner segments of the perianth. The stamens and the staminodia appear to arise from a thin

May 4, 1928.

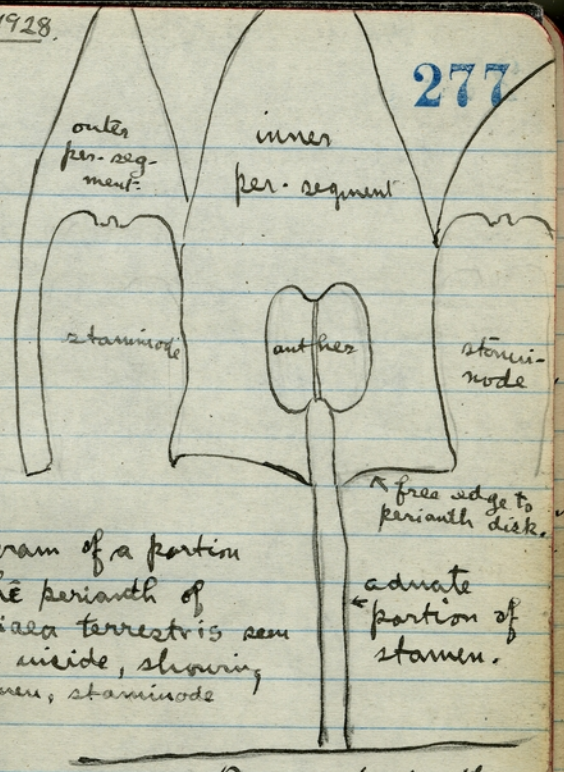
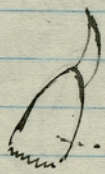


Diagram of a portion of the perianth of Brodiaea terrestris seen from aside, showing stamen, staminode

disk which lines the perianth cup. This disk has a free edge which is very marked as it runs from the base of the free portion of the filament to the staminode adjacent.

The apices of the outer per.-segments are tipped with a very distinct "horn" or slender process.



Diagrammatic.

The inner segments are obtuse and without a horn. Cont. p. 279.

No. 12,731. Achillaea borealis ssp. californica. Dry hills.

No. 12,732. Convolvulus subacaulis Greene. Dry hills.

No. 12,733. Baeria Dry hills

– Brodiaea terrestris Kell.. Cont. from p. 278 (no. 12,730). The staminodes are retuse at apex with a tooth in the sinus or bay. They are attached at the edge of the "disk" by a broad base (only a little contracted). The anthers are notched base and apex. Dry adobe hills. Sometimes the staminodia simply bear a tooth at apex, as it were and are not retuse. The staminodia are white, not "yellowish" (Man.). Anthers approximate about style; staminodia erect.

(Oct. 2, 28)

— Mr. H. L. Mason says: Experience of those in the Sierra Nevada, Tuolumne Co., clearing brush land, that goats are more effective than fire, that grass comes in better after 3 or 4 years feeding by goats." I have seen clover species (3 or 4) come in in such a goat-grazed place where no clover was ever seen after chaparral fire. Thirty fires, started by lightning, occurred in one day near Mather when I was there. Mr. Carl V. Meyer says Brodiaea species came in, in great abundance after chaparral fire, in San Diego Co. (doubtless near Escondido, his home). Mr. Hermanus Van Elden spoke of the changes in vegetation brought about by grass fires in South Africa (Memoirs of the Dept. Agr., Union of South Africa). Mr. Mason says charred wood is found in Pleistocene deposits excavated by Rim

Santa Clara Co.

No. 12.734. Prunus ilicifolia Walp.
Rocky outcrops.

No. 12.735. Melica imperfecta Trin.
This grass grew on a rock outcrops.

No. 12.736. Cirsium
Crimson heads. 5 ft. h., with few branches above the base, but the main stem comparatively short.

No. 12.737. Stachys californica Bth. = S. bullata
Cor. pink. Shady Half-shade.

No. 12.738. Chaenactis
Rocky outcrop. Cor. yellow.

No. 12.739. Microseris heterocarpa

No. 12.740. Lupinus microcarpus sinus subnexus var. ? haenicens C.P.S.

No. 12.741. Senecio breweri Davy
Rays yellow, about 7.

282

No. 12.742. Melica torreyana Scribn. This grass grew on semi-moist slope, openly wooded.

No. 12.743. Cirsium

Stem very much and closely branched to form the inflorescence. (No. 12.736 is always very open). The leaf segments are deeply lobed, projecting forward of the rachis in such a way as to make a double row or barrier of spiny-tipped lobes. The outer involucral bracts (secondary involucral bracts) are appressed at base, at the middle say, their tips spreading so as to make a sort of "ruff" about the middle of the involucre, the upper (or inner) bracts all appressed, not spreading.

283

Corollas white. Not yet in full flower.

- Sabia mellifera Jepson.
- Aesculus californica

- From the summit, 1386 ft., we travel down quickly in a rather broad long dry valley with old-time ranches scattered over it. The pass is low and the approaches short, especially on the east side. Going east from the summit we soon come to the old-time road house, Bell's Station.

- Cont. from bottom p. 286. Thornber, always quiet spoken, said as if depressed by the rude voice: "I just feel like getting up and leaving the country". (!) His jokes were usually quiet and of that sort.

San Joaquin Valley plain,

May 14, 1928.

W. Merced Co.

=A. symmetricus Held.

No. 12,744. Astragalus leucopsis Torr. var. asymmetricus Jones. Clumps 3 ft. h. on the plain east of the San Joaquin River bridge (the one east of Las Banos). *

The locality is not far from the Chowchilla River, the dry sandy bed of which we cross in a few miles. Corollas cream-tinted.

* Santa Rita Bridge, 125 ft. alt.

- Allenrolfea occidentalis

On the alkaline plain about 4 miles east of the San Joaquin River bridge (east of Las Banos), the plain shows wide colonies of this species; erect shrubs 3 to 4 ft. h. I should guess that there were about 4000 acres of it, so far as I could see from this point.

Buchanan, Madera Co.

May 14, 1928.

- From Las Banos across the plain easterly we come to Califa on the main motor highway, thence we work easterly up into the foothills to Buchanan. This is now a ranch. It was, says Vigneto, the owner, once a town of 1000 population. The copper mines near here were active in 1867 and thereabouts. Ore was hauled out by bull teams to Stockton and thence shipped by sea to Swansea in Wales for refining, there being no plant in California to do it at that time.

Just below Buchanan, say two miles, is a one-time important ranch, now abandoned, which belonged "in gold days" to Jonathan Ray. The house was for its time a pretentious mansion undoubtedly; two stories, a hallway, large

Buchanan, Madera Co.
May 14, 1928

rooms on either hand; a fine chimney of dressed stone. The ranch is now merely an appendage to some other ranch and we found no one about the place, all the buildings going to decay. The house is set amongst trees, which look grateful here in the treeless foothills. See p. 338.

Vignolo. The rancher was born here; he is a son of an 1850 pioneer.

Cont. from p. 478 sup. Ely, after telling a long, ludicrous and profane yarn got up and went off into the meadow to get a bucket of water. As he disappeared in the Tamarack Pines I could him raise his voice in comic dolefulness, singing plaintively: "Oh, where will a poor man go when he dies!" One evening, at dusk, a mule emitted a lugubrious bray (Cont. p. 283 ante).

Delhi, Merced County, 110 ft.
May 15, 1928.

- Coming north on the main motor highway we cross the Merced River bridge and immediately there are high-lying rolling sandy fields where we collect the following:

No. 12,745. Oenothera trichocalyx Nutt. var. cognata (Jepson.) Common; a little north, of Delhi, a ten-acre field full of it.

No. 12,746. (Discarded, insect damaged) Godetia. Stigmas ovate, crimson. Common in a very restricted colony (a few acres). Cor. pink.

No. 12,747. Astragalus douglasii Gray. Stems decumbent, forming a low sprawling plant. Corollas greenish!

No. 12,748. Lupinus formosus Greene. Cor. blue. Stems ascending.

No. 12,749. Phacelia distans Bth. Erect! Cor. pale blue. Common.

[Buchanan, Madera Co.
14 May 1928.]

Cont. from p. 286.

– Viguola, the rancher, sat by the fence, and told us many stories of early days, as we cooked our supper. One of these stories related to "hold-ups" of the Yosemite stage by, as every one believed, Charley Meyers, but Meyers was not convicted. Meyers is now a respectable citizen at Fresno Flats, running the main garage there, as well as some other business side-lines. Having become high-toned, he succeeded in getting the name Fresno Flats, because of its odor of outlawry, changed to Oakhurst, quite a high-toned name!

The Rea ranch joins a ranch owned by the Daulton Bros. who evidently own much land about Daulton-sta. on the railroad line to Raymond.

Newman, Stanislaus Co.

May 16, 1928.

No. 12,750. Collula cornopifolia

River bottom, east of San Joaquin River, east of Newman.

No. 12,751. Spergularia

This annual was collected with 12,750.

We drive on easterly a short distance and cross the Merced River, a fine broad deep stream, by a bridge. Thence easterly we keep near the Merced River for many miles. The Merced is marked by a wooded strip along its banks and lowland, contrasting strongly with the parched treeless plain, over which we are traveling. The narrow somewhat open woodland following the course of the Merced is composed of arborescent willows (Salix nigra, etc.) and live oaks, Quercus lobata (fine individuals) and Quercus wis-

Livingston to Planada, (5 mi. sw.) Merced Co.

lizerii (also fine individuals). We continue along the plain and stop to collect in the sandy fields, 5 mi. sw. of Livingston, the following:

No. 12,752. Orthocarpus purpurascens Bth. The two sheets represent about, or nearly, 2/3 of the plant. (Only a small portion eventually kept).

No. 12.753. Hemizonia kelloggii Greene

No. 12,754. Gilia capitata Sims ssp. staminea (Greene) A. + V. Grant ~~achillaefolia Bth.~~ = ~~G. staminea Greene~~. Luxuriant.

– The native vegetation of the San Joaquin plains, while completely destroyed in large areas, can be recovered in large part from relic areas here and there, especially the plants of the very sandy soils – the white-sand areas. Chlorogalum pomeridianum is now flowering,

displaying its tall shafts near Atwater.

No. 12,755. Asclepias vestita Near Atwater, Merced Co.

– We drive in to Merced and turn easterly on the Yosemite highway. A few miles east we come to the station Tuttle by which stands the huge monument to the pioneer Foncher. Soon we are out of the orchards, past Planada, and running over the undulating barren plain that always borders the Sierra foothills. Soon after entering the foothills (lowest) we

292

come to Owens Creek and make camp for the night under the shade of the Live Oaks which border a small dry gulch or winter rivulet. On the dry hills, openly wooded with Quercus douglasii I collect the following:

No. 12,756. Amsinckia Menziesii tessellata
F. & M. = A. hellari Brand acc. N.F.H.

No. 12,757. ~~Filago~~ Micropus californicus F. & M.

No. 12,758. Orthocarpus densiflorus Bth. Bracts white-tipped; sacs of corolla yellow, each with a small transverse brown mark.

No. 12,759. Linanthus ciliatus Greene.

No. 12,760. Godetia quadrivulnera Spach. Petals crimson, from obovate to narrow, the apex truncate ↑broadly ↑very mostly, but varying from erosulate to erosulate with a notch, to

12,756a. A. eastwoodiae Mchr.

erosulate with a "spear point" in the notch. See next number. 293

No. 12,761. ~~Clarkia purpurea ssp.~~ Godetia quadrivulnera Spach.

The individuals of the previous number (12,760) were alike in every particular (save as noted below), alike in hue, pubescence, size, shape, aspect and even attitude of leaves; alike in inflorescence, in ovaries and young fruit; alike in all observable ways except in size of plants and in the petals. Variation in size of individuals may obviously be, here, disregarded. Variation of petals in 12,760 I have noted above. The plants of 12,761 I believe to be specifically quite like those of 12,760. They were segregated because all have very narrow petals, the only petals with a notch or even a cleft at apex and a long spear point in the notch. (Some of 12,760 have narrow petals of that type). But in 12,761 the petal type, as just described is carried

to a greater extreme by a series of gradations, so that we finally have a narrow or nearly linear petal which, we may say, is 3-lobed at apex. In other words this is the Clarkia type of thing. May not the dry land Godetias have been derived from the mesophytic Clarkias by a sort of reduction and partial adaptation to arid conditions. The individuals in which the narrow 3-cleft petal type of 12,761, is most pronounced, are mainly the starved or less thrifty plants, possibly representing a sort of nanism (or juvenilism?).

No. 12,762. Tritelia. Brodiaea laxa

Shade of oaks, on bank of small dry winter rivulet. This is a different strain from the plant of open Coast Range adobe hills, or

of shady situations near the coast.

No. 12,763. Trifolium tridentatum Lindl. var. mariposa Jepson. Dry grassy hill slope, Cathay Valley. A colony of it, noticed only in one place. Colony of scattered individuals, perhaps an acre of it. The heads are remarkable for becoming cylindric!

No. 12,764. Sidalcea hartwegii Gray.

Flowers small; corolla pink. Dry grassy hill slope.

No. 12,765. ~~Godetia~~ Clarkia purpurea ssp. viminea

With 12,764.

No. 12,766. Navarretia pubescens H. & A.

With 12,764.

No. 12,767. Trifolium ciliatum Nutt. = T. ciliolatum Benth.

With 12,764.

No. 12,768. Lupinus microcarpus Sims L. densiflorus var. densiflorus Jepson. This species prefers banks and broken ground. This spm. represents 3 or 4 named species of Piper Smith acc. E. K. Crum. See note with spm.

No. 12,769. Bryoxiphium flaccida Greene

No. 12,770. Sanicula bipinnata H.&A.

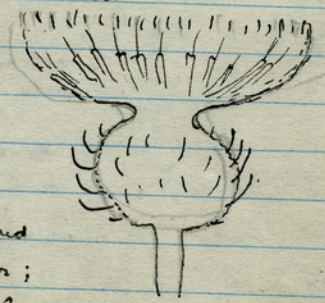
The young fruits have the "pustules", as it were, "frosted"; by "young" is here meant full-grown, but not ripe or mature.

No. 12,771. Aira caryophyllea L.
(Det. Boecher Crampton, March 1932)

This grass is frequent in grassy open lands, occurring mostly in small colonies (a foot or so square). Yet again, I find it everywhere!

No. 12,772. Eriodictyon californicum (H.&A.) Greene.

No. 12,773. Cirsium



Stamen-tubes and styles lavender; corollas dull white.

May 17, 1928.

No. 12,774. Pentstemon breviflorus Lindl.

No. 12,775. Carex

Forming very heavy stools, 3 ft. h. and broader, very dense, in rocky bed of living stream.

No. 12,776. Pectocarya pusilla Gray.

No. 12,777. Filago gallica

Grassy hillslope, quite in the "wild", openly wooded country.

– Ailanthus glandulosa Desf. Somewhat spontaneous.

– There is little left of Mormon Bar of mining days; almost nothing. There are ruins of two adobe stores that stood on the main street. The iron fixtures of the doors still stand between the adobe bricks, in addition to the iron plates above the doors that hold the wall above. The present "store" and "hotel" are modern shacks.

– Centaurea melitensis

Bootjack, Mariposa Co. 2242 ft

298

No. 12,778. Galium Forming a small but dense colony in an open grassy vale at Bootjack.

No. 12,779. Plagiobothrys tenellus Gray. With 12,778.

No. 12,780. Trifolium ciliolatum Benth. = T. ciliatum Nutt. See p. 339. With 12,778.

No. 12,781. Thysanocarpus elegans F. & M. (T. curvipes var. elegans Rob.)

No. 12,782. Plagiobothrys nothofulvus Gray. With 12,778.

No. 12,783. Lupinus nanus Dougl. var. vallicola C. P. Sm. With 12,778.

Above Bootjack

No. 12,784. Silene californica Dur.

No. 12,785. Trifolium tridentatum Lindl. var. watsonii Jepson. In shade of oak where there is very slight vegetation.

No. 12,786. Fremontia californica Torr.

May 17, 1928

299

No. 12,787. Rigiopappus leptocladus. Rays 1 to 4, brownish. With 12,786.

No. 12,788. Madia subspicata Keck. With 12,786

No. 12, 789. Madia exigua (Sm.) Gray With 12.786.

No. 12, 790. Agoseris heterophylla With 12.786.

No. 12,791. Thysanocarpus elegans F. & M. (T. curvipes var. elegans Rob.) With 12,786.

Bootjack is a community or settlement on the Wawona road above Mormon Bar. It is rolling Blue-Oak-Digger Pine - some Yellow Pine country; very attractive just now. We botanized in a flowery open amongst the trees where a path runs on up the slope and disappears in its windings. With my hand full of flowering plants I stood a moment to admire the sylvan scene, when I saw two very small children [see p. 307]

Chowchilla School, Mariposa Co., May 18, 1928.

3000 ft.

No. 12,792. Arctostaphylos mariposa Dudley. About Chowchilla School this species is a large shrub. Around our camp, about 2½ mi. above the school the shrubs are 8 to 12 ft. h. on the dry slopes. In a little swale below the camp are three larger shrubs in a cluster. One is 17 ft. h. (possibly 18); another is 21 ft. h (possibly 23 ft.); the third being the smallest. The second shrub is 2 ft. 3 in. diam. ↑trunk longest way at the ground. Like this species in general, the trunks forks at the very ground (4 forks) and again within half a foot or a foot. The largest of the trunk forks is 1 ft. 2 in. diam.

The new foliage shoots have recently appeared; the leaves are green, not white, and form a contrast to the older white leaves.

The leaves persist three years; at least there are two years of old leaves on the shrubs at this time.

No. 12,793. Lupinus bicolor Lindl. Var. microphyllus. Very common on the grassy slopes.

No. 12,794. Calochortus albus. Scattered individuals on the openly wooded slopes.

— From Boot Jack we travel on up the Wawona Road (see p. 299) and turn off that road ↑past Usona southerly at a point about ¼ mile beyond the Chowchilla School. In a little over ¼ mile we pull out of the road on to a little ridge openly wooded with Pinus ponderosa, Quercus californica and chaparral (Arctostaphylos mariposa, Ceanothus cuneatus, Eriodictyon californicum 5 to 6 ft. h.) and camp for two nights.

— Ceanothus divaricatus Nutt. See p. 338 (near bottom). Usona *

302

3000 ft

No. 12,795. . Nemophila heterophylla F. & M.

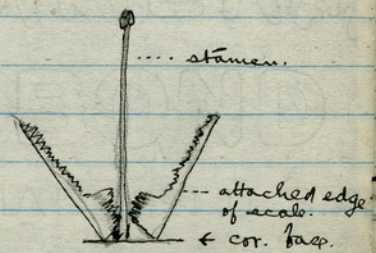


Diagram of scales.

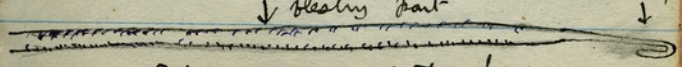
The pair of scales spread in a V-shaped manner from the base of the filament. They increase in breadth downward, crenulate, becoming laciniate towards the base.

-This camp (see p. 301) is very pleasant. A great many species are in full flower, Eriodictyon californicum is in full flower, while the charming little Lild across the wagon road, brush-crowned, bears a fine individual of Fremontia californica in full flower, quite covered with bloom.

303

No. 12,796 . Vicia californica Greene.

Banner pale lavender, veined, broad, very obtuse, notched at apex. Wings white, 4/5 as long as banner; keel shorter than wings. Rootstocks slender, arising from a distinct but very small deep-seated root-crown. From this root-crown (relatively) the almost filiform underground portion of the aerial stems arise. About the time of flowering the root-crown sends out horizontal rootstocks, long, fleshy or tuberous-thickened (by this is not meant manifform); perhaps cylindric-fleshy rootstocks would be better as a phrase; these newly forming structures are now actively growing; their tips as they move through the soil are curved back so as to present a blunt-advancing surface, so:



Advancing rootstock.

Chowchilla School, Mariposa Co., May 18, 1928.

3000 ft.

This species grows in the leaf-mold in the shade of Quercus Kelloggii.

No. 12,797. Viola ~~purpurea Kell.~~ ~~gunnisoniana~~ Scl.

Openly wooded slopes.

No. 12,798. Euphorbia crenulata Engelm.

Openly wooded slopes.

No. 12,799. Gilia tricolor Bth. var. congesta Parish.

Colony, almost pure, 6 ft. across, in shade of brush.

No. 12,800. Eriophyllum greenii.

With 12,799.

No. 12,801. Solanum xanti Gray var. glabrescens

Stems several to many, spreading from a central crown. Cor. dark blue. Openly wooded slopes. Not woody. = var. nevadense Jepson var. n.

No. 12,802. Cryptanthe Torreyana Greene.

Openly wooded slope.

No. 12,803. Clarkia Godetia dudleyana Abrams.

Openly wooded steepish slopes.

No. 12,804. Wyethia elata H.M. Hall

Flat, in a little vale, openly wooded country

No. 12,805. Bromus mollis L.

This grass is common in open vales.

No. 12,806. Lolus micranthus Bth.

Grassy slopes.

No. 12,807. Elymus glaucus Buckl.

Stools of this grass are much scattered, each stool being "thin" or "open", consisting of a few distinct or discrete culms. Openly wooded slopes.

No. 12,808. Brodiaea Triteleia ixioides Greene

Openly wooded slopes.

No. 12,809. Galium

Openly wooded slopes.

No. 12,810. Melica californica Scribn. var. nevadensis Boyle

This grass grows on openly wooded slopes in much scattered stools, the stools consisting of a few culms. The

Chowchilla School, Mariposa Co.
3000 ft.

culms are bulbous - dilated at base.

No. 12, 811. Bromus carinatus H. + A. Complex
This grass grows on openly wooded slopes, the stools scattered and consisting of few culms.

No. 12, 812. Ribes roezlii Regel.
Stems spreading, a low bush (2½ ft. h.). Openly wooded slopes.

No. 12, 813. Senecio integerrimus Nutt. ??
Shady spots, openly wooded slopes.

No. 12, 814. Pedicularis densiflora Benth.
Wooded slope.

No. 12, 815. Lolus ~~douglasii Greene var.~~ nevadensis Ottley.
Prostrate, open spots in the forest.

May 19, 1928

No. 12, 815a. Caucalis microcarpa H.&A.
This umbellifer not uncommon in grassy places.

[Cont. from p. 299.] coming down the path talking to each other in the most earnest way. They were probably not over 5 or 6 years. Quite absorbed, they did not see me until quite close. Then they stopped, afraid. I spoke to them reassuringly and they came on slowly. They were coming home from school. I asked their names and the reply was quick and confident but not bold. Said the boy, who was the smaller: James Milton Carlton; said the girl: Barbara Inez Wilson. It is obvious that the old-time populations here in the foothills still holds: old American stock with British names. After a bit trooped by a crowd of older chil-

dren, all from the Sebastopol School, hidden back in the woods, away from the highway.

– We break camp [see p. 301] where we have been encamped two nights, and travel down grade to the West Fork of Chowchilla River, a fine brawling mountain stream, cross it and climb upward along Hogan Creek, a tributary of the Chowchilla. We stop midway of Hogan Creek and collect:

No. 12,816. Lupinus stiversii Gell. One colony of it on the rocky openly wooded hillside is all I noticed. It is our most showily beautiful Lupine: banner yellowish or yellow, turning soon to burnt umber; wings a fine crimson and very large, holding their color

c. 2700 ft. May 19, 1928.

No. 12,817. Phacelia imbricata Greene. Rocky outcrop. = P. calycosa (Gray).

No. 12,818. Delphinium Hansenii Greene Lavender-white flowers det REB Nov. 1959

No. 12,819 Pityrogramma triangularis (Kaulf.) Maxon var. triangularis This fern grew on a rocky outcrop.

No. 12,820. Pityrogramma triangularis (Kaulf.) Maxon var. triangularis This fern grew with No. 12,819.

No. 12,821. Chorizanthe membranacea Benth.

– We continue to climb on Hogan Creek until reaching a forks in the road, one fork easterly to Sugar Pine, one southerly to Oakhurst. We climb again, over a newly worked road to a summit, then down over an excellent road to Nipinnawasee (a little settlement in pretty oak-flat country, partly resort probably), on down again over a good road to Ahwahnee where the

Ahwahnee, Madera Co. c. 2100 ft.

following numbers are collected:

No. 12,822. Collinsia heterophylla Graham. Very purple corollas.

No. 12,823. Phacelia platyloba Gray. Plants 2½ ft. h. and much branched from the base. A small but representative plant taken. Strictly annual.

No. 12,824. Asclepias vestita H.&A. Common in the dry grass everywhere at Ahwahnee (and all the way to Fresno Flats). Hoods marble-white, aging to a distinct yellow, not a marcescent yellow, but a "live" yellow. Stems several to many from the root crown, forming an erect cluster. See p. 328. See p. 320.

May 19, 1928

No. 12,825. Linanthus dichotomus Dlp. Bth. Sandy soil.

No. 12,826. Eriophyllum Sandy soil.

No. 12,827. Linanthus filipes (Bth.) Greene. Corolla yellow-throated, the limb lavender. Sandy flats.

No. 12,828. Gnaphalium palustre Moist flat, margin of winter pond.

No. 12,829. Agoseris heterophylla with 12,828.

No. 12,830. Herniaria cinerea DC. with 12,828.

No. 12,831. Downingia Lower lip of corolla tre-foil shaped (the lateral lobes spreading at right angles to the middle lobe), blue, the center with 2 yellow spots on a white field; the two narrow lobes of upper lip curved back-

Ahwahnee, May 19, 1928.
Madera Co. c. 2100 ft.

ward horizontally. Moist bed of former vernal pool.

No. 12,832. Veronica peregrina L. with 12,828.

No. 12,833. Allocarya californica A. cusickii Greene, = A. cusickii Greene var. vallicola Jepson. Decumbent or ascending stems.

No. 12,834. Briza minor L.

This grass grows with 12,828.

No. 12,835. Juncus bufonius L. with 12,828

No. 12,835a Juncus triformis Engelm. This was with J. bufonius

Fresno Flats

Plantago lanceolata Very much in the "wild".

Nemophila maculata Bth

Brodiaea volubilis 5 mi. up. Bass Lake road.

Fresno Flats, May 19, 1928.

It is a beautiful country about Ahwahnee - rolling grassy flowery oak-covered country - fine Valley Oak, Blue Oak, Digger Pine, Live Oak (Quercus wislizenii. Particularly fine now are the slopes covered with Lupinus (no. 12,851). I have seldom seen so much of it in the hills.

We run on through such country to Fresno Flats. A storm gathers in the high Sierras above us, the thunder rolls, the storm edge moves over us and it rains hard for three hours. We go into camp off the road, in the open glades of the oak-type country and stay for the night, near the village of Fresno Flats, now Oakhurst.

It is a beautiful rolling oak-studded country. The village is very

[Cont. p. 319.]

Fresno Flats, Madera Co.

12,836 A. Chorizanthe stellulata Benth. 2270 ft.

No. 12,836. Ceanothus? leucodermis Greene ~~divaricatus Nutt.~~ Rather common.

No. 12,837. Orthocarpus attenuatus Gray. see p. 339. Grassy glade.

No. 12,838. Trifolium variegatum Nutt. Wet flat.

No. 12,839. Convolvulus fulcratus Greene. Dry grassy slope.

No. 12,840. Trifolium microcephalum Ph. Grassy slope.

No. 12,841. Juncus tenuis Willd. var. congesta Engelm.

No. 12,842. Potentilla glandulosa Lindl. var. reflexa Greene. Petals yellow. Perhaps 1/7 of the plant taken. Stems several, forming an erect cluster.

No. 12,843. Galium

Erect bushy plant, the persistent old stems up to 7 in. h., not seemingly "woody", but actually persistent over the winter. Grassy glade. Cor. green, turning a dusky red.

May 20, 1928.

No. 12,844. Linanthus bicolor Greene. Cor. deep pink or livid crimson. Fine granite gravel.

No. 12,845. Mimulus viscidus Congdon. Corolla crimson; 3 lobes lower lip transversely reniform; palate whitish, a red spot on upper part; a deep and rather large crimson spot on each side throat between upper and lower lip. Sometimes lower lip pale or merely crimson edged, thus whitish or making a distinct color contrast between the upper lip and the lower lip. Fine granite sandy gravel.

No. 12,846. Hypericum anagalloides C. & S. Undoubtedly annual. Corollas pale yellow, the petals (under a cloudy sky) approximate by their edges so as to make a seemingly tubular sympetalous cor. Very slender. *12,846 a – Filago gallica

No. 12,847. Pectocarya penicillata A. DC. Sandy soil.

* Entered by LRH in 1963. Sheet numbered 12,846 from "Fresno Flats"

Fresno Flats, Madera Co.

2270 ft.

No. 12,848. Panicum pacificum Hitchc. & chase
This grass grew on a sandy openly wooded, park-like slope.

No. 12,849. Thysanocarpus curvipes Hook. var. emarginatus Jepson. = T. laciniatus Sandy grassy park-like slope.

No. 12,850. Rhus trilobata Nutt.
Park-like slope.

No. 12,851. Lupinus nanus Dougl. var. vallicola C.P. Sm. This is the species which makes so great a show throughout the country. cf. p. 313.

No. 12,852. Lupinus bicolor Lindl. var. microphyllus
Sandy flats

No. 12,853. Zygadenus venenosus
Moist spot in meadow.

No. 12,854. Agoseris heterophylla
Sandy flat

No. 12,855. Gilia capitata Sims ssp. abrotanifolia ~~achillaefolia Bth.~~ (Nutt. ex Greene) V. Grant
= ~~G. staminea Greene.~~ Sandy flat

No. 12,856. Lathyrus sulphureus Brew. Flower very "snub-

May 20, 1928

nosed". Banner whitish, finely purple veined, scarcely (however, evidently) longer than wings and keel. Wings yellowish; keel whitish, curved above so as to present a blunt or truncate end to the corolla. or form

No. 12,857. Festuca grayi (Abrams) Piper
This grass grew on an openly wooded or park-like slope

No. 12,858. Carex
Dry grassy slope.

[Nos. 12,856, 12,857, are collected about 5 miles beyond Fresno Flats (Oakhurst) on the Bass Lake road.]

We break camp late in the afternoon, go into the village of Oakhurst for gasoline, and then drive along the Bass Lake road, up and over the divide to Bass Lake, where we camp in the pine woods at 6:30.

The next morning, May 21, we drive on to North Fork (see p. 322).

Bass Lake, May 26, 1928
Madera Co. 3350 ft.

No. 12,859. Osmorhiza brevipes C.&R. This umbellifer grew in pine woods by Bass Lake.

No. 12,860. Dicentra formosa Shady woods.

No. 12,861. Ribes roezlii Regel. Pine woods.

No. 12,862 } not used.
No. 12,863 }
No. 12,864. }

No. 12,865. Viola quercetorum B.&H. purpurea Kell. Open pine woods.

No. 12,866. Iris Pine woods.

No. 12,867. Delphinium gracilentum Greene Pine woods.

No. 12,868. Luzula Pine woods.

[Cont. from p. 313] small, four or six houses. Back of the village is a graveyard which shows how old the settlement is by the death dates on the stones – the early 80's and probably settled long before. The settlers were old American stock – British names all: Scribner; Trigg; Westfall; Newton; Brown; Taylor; Hereford; Merritt, Rossiter; Harbours; Scanland; Chinnick; Minnis; Crooks; Chaffee. How old-fashioned a name: Zachary T. Hurt! Then there was James Crawford Almora, India, born at Ayr, Scotland, May 1, 1845, died Sept. 22, 1908 at Home Orchard, Calif. Also Jeanie Braw Fennemore, born at Ayr, Scotland, May 14, 1844, died May 24, 1910 at Home Orchard, Calif. [Cont. p. 320]

Back of the graveyard, a little flowering hill, is a quiet green grassy vale, with noble Valley Oaks rising from the clover on its edge, tall white handsome trunks. A fine sylvan scene. I leave it with regret. The meadow so flowery, the Valley Oaks so tall, their trunks so white.

[Fresno Flats, cont. from p. 316. May 20, 1928]

– Godetia dudleyana Abrams. Frequent but almost always in small compact colonies. Seems to require spots where there has been nothing brush or other such remains. See 12, 870.

– Collinsia no. 12, 822. Usually in small dense colonies in woods.

– Asclepias vestita H. & A. This is an almost white-silvery plant, its many stems in a compact cluster making a fine show on the yellow flats and slopes. (See p. 310).

[Cont. from p. 319. One name, John Hardy Lowry, has engraved a line from Robert Louis Stevenson at the top of the stone: "The hunter is home from the hill." Near this stone, or rather by it, is that of Mary E. Thayer of Boston.]

– Abnormal Quercus lobata Nee. A strange-looking tree near the village of Fresno Flats; 41 ft. h.; trunk circ. at 4 ft. = 8 ft. On the trunk, one side, at 5½ ft. is a burl or swelling 3 ft. 4 in. broad. The trunk

above this burl goes straight up bearing a thin small high crown, below which is a broad dense dark crown very different in appearance. This lower part of the crown is formed entirely from large branches arising from the burl, the branches spreading symmetrically around the trunk to make this dense lower crown 50 ft. in longest diam. through which one cannot see because the branchlets are so very twiggy and very foliaceous. This dense crown is about 26 ft. h. It has larger greener leaves than the thin upper few-branched crown. It is, as it were, parasitic on the normal tree or normal part of the tree. The thin upper crown is about 15 ft. through vertically. The burl is plainly pathological.

North Fork, Madera Co.

May 21, 1928. c. 3100 ft.

No. 12,869. Rosa pinetorum Hel.

Open pine-oak woods. Corolla bright crimson, darkening on drying.

No. 12,870. ~~Godetia~~ Clarkia dudleyana Abrams.

Very common; sometimes occurring freely in the grassy opens and not especially associated with individual shrubs. cf. p. 320, ante.

No. 12,871. Lonicera

Trunk rather stout but the shrub as a whole supported by a manzanita; height about 8 ft. Corolla buckskin yellow.

No. 12,872. Orthocarpus linearilobus Bth. Grassy glade on the wooded slope. See p. 339.

All the above were collected above North Fork a little on Bass Lake road. c. 3100 ft.

North Fork, Madera Co.

May 21, '28

No. 12,873. ~~Godetia dudleyana~~ Clarkia cylindrica (Jepson) Abrams. L. & L.

No. = ~~G. cylindrica (Jepson)~~ Hick. Opens in woods.

No. 12,874. Sanicula bipinnatifida Dougl. Grassy opens on wooded slopes.

No. 12,875. Lomatium vaseyi C. & R. Grassy opens on wooded slopes.

No. 12,876. Fraxinus dipetala H. & A. Very erect shrub 10 ft. h. on hillslope.

[Nos. 12,873-6, betw. North Fork and San Joaquin Bridge.

San Joaquin River at Fish Creek, Fresno Co., May 21, 1928.

We go sharply down hill from North Fork to the San Joaquin River and cross it by a bridge near Fish Creek. See also p. 333. In the river bottom:

No. 12,877. Cyperus

No. 12,878. Gnaphalium

No. 12,879. Cercis occidentalis Torr. River bench

3 mi. n. of Auberry, Fresno Co. (Rogers Valley c. 2000 ft.) {but see p. 330 Sept.

We climb the hill from the San Joaquin River bridge and (Rogers Valley) see p. 330 in a little vale on the hillslope, about 3 mi. northerly from Auberry (see p. 335) we collect in and near a moist rivulet:

No. 12,880. Navarretia viscidula Bth. Hard dry ground.

No. 12,881. Calycadenia Mollis Gray. Dry ground.

No. 12,882. Centaurium venustum Rob. Moist soil

No. 12,883. Collinsia tinctoria Hartw. Two short ridges or callous processes on angle of upper lip. Moist soil.

No. 12,884. Filago Dry soil

No. 12,885. Scutellaria bolanderi Gray. Moist soil

No. 12,886. Clarkia virgata Jepsonia Williamsonii D.H. Dry soil.

No. 12,887. Monardella candicans Bth. Moist soil.

No. 12,888. Mimulus Moist soil.

No. 12,889. Juncus bufonius L. Moist soil.

No. 12,890. Hemiaclodus Sandy cult. field. Corolla nearly white, the 3 lobes of lower lip with a crimson cross band on lower part and a dash of yellow below. Each lower stamen with about 4 cylindric processes, these forming a sort of fasces or cluster set in one plane.

No. 12,891. Gnaphalium palustre. Moist sandy flat.

No. 12,892. Pentstemon laetus Gray. Cor. blue-purple; very handsome plants. A heavy cluster of erect stems 3 to 3½ ft. tall. This is the only time I have noticed this species this trip.

Auberry, Fresno Co., May 21, 1928. (Rogers Valley), but see p. 330 c. 2000 ft.

No. 12,893. ~~Godetia~~ Clarkia modesta ~~epilobioides~~ Watz. Petals pink-crimson, very narrow, dotted on lower half. Moist flat.

No. 12,894. Heterocodon rariflorum Nutt. Moist flat, the plants mainly concealed by other vegetation in a flowery grassy spot.

No. 12,895. ~~Collomia gilvoides Bth.~~ Allophyllum divaricatum ~~Gilia gilioides Greene~~. Sandy soil.

No. 12,896. Linanthus ciliatus Greene. Sandy soil

No. 12,897. Juncus dubius Engelm. Moist sandy flat.

No. 12,898. Trichostema oblongum Bth. Moist flat.

No. 12,899. Linanthus montanus Greene. Openly wooded hillslope.

— We are now leaving the Black Oak band in the foothills. It is a very distinct band in this [cont. p. 332]

Friant, Fresno Co., May 22, 1928 339 ft. rep.

No. 12,900. Cucurbita foetidissima HBK. Dry river bench, San Joaquin River. See p. 331.

No. 12,901. Eleocharis macrostachya Bed of former winter pool, still moist.

No. 12,902. Allocarya stipitata Greene var. micrantha Mkbr. With 12,901.

No. 12,903. Downingia Corolla pale blue, the center with two greenish spots on a quadratish (but not very sharply defined) white ground. Bed of former winter pool.

No. 12,904. Eryngium Beds of former winter pools.

[Nos. 12,901 to 12,904 were collected 1 mile n. of Friant in Madera Co.]

— Datura meteloides DC. Common; dry hills by river near Friant.

328 339 ft. c. 500 ft.

No. 12,905. Boisduvalia densiflora (Lindl.) S. Wats. Moist flat in the hills, one mile W. of Belleview, Madera Co. Asclepias vestita H. & A. (same as no. 11824). Common in the hills. From Auberry (see p. 326) we ran quickly down in the foothills to Friant. On the way I noticed on rock-piles in the fields occasional clusters of Scrophularia californica. Later I collected this (12,911). We also passed a little hill which was barren save for bushes of Lotus scoparius. Friant is a dry little village at the very edge of the foothills. There is a considerable population of Indian families. We cross the bridge and camp for the night under the willows by the waters edge on the Madera shore. The San Joaquin is here a fine rapidly

(Cont. p. 331).

329

No. 12,906. Chorizanthe membranacea Cottonwood Creek, 2 mi. south of Bates road sta. See next no.

No. 12,907. Calycadenia mollis Gray With 12,906. On open hillsides, very thinly wooded with Quercus douglasii, that is, the trees very scattered. With 12,906.

No. 12,908. Cephalanthus Abaut 3 miles westerly from Bates sta.

No. 12,909. Astragalus douglasii Gray. Stems decumbent, dry hillslopes.

No. 12,910. Senecio douglasii DC. Bushy plant 5 ft. h. with distinct trunk below.

c. 500 ft.

No. 12,911. Scrophularia californica C. & S.

Many stemmed erect tall plants (7 ft. h.). One-half the panicle taken. West of Bates sta. about 2½ mi.

— Cont from p. 324. Rogers Valley may be used as the name of this vale. See. F. B. 52:107. — But F. M. Smiley in litt. 3-19-32 says Barnett ranch.

No. 12,912. Pilocarphus brevissimus Nutt.

This gnaphaloid plant grew in a wet but now cement-hard and dry adobe flat in the hills. Raymond, 6 mi. S.

No. 12,913. Pogogyne douglasii Bth. With 12,912. Raymond, 6 mi. south. with 12,912.

— Cont. from p. 328.

moving stream 300 yards broad at least and not at all shallow. On the first river bench is Cucurbita foetidissima H.B.K. (no. 12,900) The next morning we drive northerly, collect nos. 12,901 to 12,904, about 1½ miles northerly from Friant, go on to Belleview, thence 1 mile west, then back to Belleview and to within about 1½ miles of Friant turning westerly on the Marysdale School Road, thence to the Fresno-Yosemite road, running northerly on it to 1 mile of Bates sta. On this road within I collect nos. 12,906 and 12,907. We turn westerly, cross over by a cross road to the Madera-Yosemite Road. On the cross-road, a lonely road in the hills, near a ranch house I notice a very dense leafy bush in a hollow. This bush seems out of place in these dry hills, since it is [cont. p. 336.]

[Black Oak belt, May 19-22]
Cont. from p. 326.

332

[Cont from p. 326] region. While the course of the road followed has not kept to one altitude, this mingling zone between the Upper Sonoran and Transition has been fairly well kept to, from Mariposa Co. to Fresno Co., a strip, with Pinus ponderosa from above and Pinus sabiniana from below mingling with the Black Oak, Quercus Kelloggii. The shrubs are mainly Ceanothus cuneatus, Rhus trilobata and Arctostaphylos mariposa. The latter is the only species of Arctostaphylos I have noticed this trip. It seems to replace completely Arctostaphylos viscida of the northern Sierra Nevada foothills. Gamphocarpus cordifolius (Benth.) Gray (Asclepias cordifolia Jepson), occurs near North Fork [cont. p. 334]

[Near Fish Creek, San Joaquin River]
Cont. from p. 323.

333

[Cont. from p. 323. About the San Joaquin River Bridge on the Madera side are colonies of Asclepias vestita H.&A., same as no. 12,824. This station is at Power House No. 3, a little above Fish Creek, a tributary on the Madera side of the river. I call the station Fish Creek (see p. 323) as the only available definite name.* Sisyrinchium californica is [place] here, on the Fresno end of the Bridge with Cercis occidentalis. Also Pentstemon breviflorus Lindl. (as no. 12,774), which has been observed as an occasional individual since same Bootjack, Mariposa Co.

* This is now near Kerchoff Dam.

[Black Oak Band, May 19-22]

334

Cont. from p. 332.

[Cont. from p. 332.] as scattered individuals. It has been seen as solitary individuals, on this trip, all the way back to Mariposa. The pink Calochortus albus (var. rubellus) appeared between Wishon rr. sta. near Bass Lake and North Fork. Eriodictyon californicum is abundant about North Fork; it has occurred abundantly since Mariposa. It often appears in large and rather dense colonies. On this trip Eriodictyon californicum is noticed from entering to leaving the Black Oak belt. It seems to replace Adenostoma fasciculatum which I do not recall noticing anywhere on this trip. Cont. p. 339.

[Auberry, Fresno Co., May 21, 1928.]

Cont. from p. 324.

335

[Cont. from p. 324 near top. This station proves a "gold mine"! It is about halfway between the San Joaquin Bridge (below North Fork village) and the town of Auberry, in a sort of sloping rolling valley on the north slope. The botanizing is chiefly in a grain field with a springy rivulet running through it. Where the ground has been broken, as in the grain land — the grain being very thin — one finds Nemacladus (no. 12,890) and Mimulus (no. 12,888). On the hard dry baked earth of the near-by slope there is Navarretia (no. 12,880). And a dry field near is starry with Brodiaea coronaria, — a lot of it. Auberry* is the nearest place name and the specimens are so labeled. Occurs here also Cissium (same as no. 12,773).

* See 52: 107 seq.

[Cont. from bottom p. 331] Cephalanthus occidentalis (no. 12,908), a bush of river-banks and living streams. This gully in the hills is, however, very springy, probably perennially springy, from appearances, so that these shrubs have a reason for being here. A little further along (3/4 mile) on this road I collect on a dry hillside pr nos. 12,909 to 12,911. The latter is a very imposing plant as one sees it occasionally on rock outcrops in the hills. No. 12,910 is rather common as scattered plants over a wide area in these foothills. I am more used to thinking of it as an inhabitant of stream beds and washes and flood-plains.

After reaching the Madera-Yosemite road we travel northeasterly on it, take a cross-road that cuts across to the Berenda-Raymond road. On this cross road I collect nos. 12,912 and 12,913. After reaching the Raymond road we turn back (sw.) on it, pick up a country road to Daulton. On this road we meet farmers driving a fine lot of mules. We stop in a hollow and collect a red lichen that colors conspicuously an outcropping ledge of rocks: No. 12,914.

Red Lichen.

We pass Daulton sta. on the Raymond branch railroad, go on westerly in the hills, dry, barren, scarcely a sign of life and only widely scattered ranches. To the road we had previously (see p. 285) followed in going to Buchanan. We travel

over this road once more as far as the ranch of Jonathan Rea (see p. 285). On account of its historic interest I photograph the house. The name is evidently spelled Rea, since we find pencil records on the wall in an upstairs bedroom: Urma Rea, June 3, 1879; Leila Rea, Buchanan, Oct. 29, 1885; Leila Rea, June 17, 1892; Leila J. Rea, Dec. 19, 1888, Madera; J. E. Rea, May 29, 1891, Buchanan.

We turn back across the plain, lunch at Chowchilla in a restaurant kept by old-time Chinese, take the highway and arrive in Berkeley about 4 o'clock in the afternoon.

— Cont. from p. 301.* This Ceanothus (divaricatus) is constantly seen throughout the Black Oak belt as an associate of Ceanothus cuneatus or Arctostaphylos viscida as far south as we travel on this trip.

— Orthocarpus attenuatus Gray, no. 12,837. This species seemed rather rare as compared with O. linearilobus, no. 12,872, which grew in great abundance everywhere.

— Fremontia californica occurs as scattered individuals in the hills from Bootjack to Fresno Co.

— Trifolium ciliatum Nutt., no. 12,780, is common in grassy places all through the hills, Black Oak Band, Mariposa to Fresno Co.

— Cirsium This (which was collected at Mormon Bar), occurs frequently all through the Black Oak belt as observed on this trip. Cf. no. 12,773. See p. 335.

Jonathan Rea Ranch,
4 mi. s. of Buchanan
Madera Co., May 22, 1928.

– It has been my effort today to drive from Friant sta. on the San Joaquin River (which sta. is a few miles below Fort Miller) to the Jonathan Rea ranch by a fairly direct cross-country route. Roads show on the map, but I found them to be closed – not even a track left of them or scarcely. At the Fresno River we saw inside a field on the river bank an earthen bridge abutment – the relic end of a bridge which had been washed away in flood doubtless. I suppose these vanished cross roads to have been the old Fort Miller road. This road to Stockton, instead of taking to the valley, kept

close to the edge of the foothills. The reason for this I do not know, but in early days doubtless the valley floor was too sandy to pull through; secondly water was to be had at the edge of the foothills. All through these hills from Friant to the Rea ranch near Buchanan I am surprised at the number of springs showing everywhere in the gulches and hollows – in a country whose aspect is so dry. I have marked my route on a Cal. Auto Association map (Yosemite Route Map).

A fragment (so to speak) of the "Old Fort Miller and Stockton Road" is shown on the Indian Gulch Quadrangle, U.S. Topog. Maps and so printed in.

Berkeley, June, 1928.

— Mr. S. B. Parish, Honorary Curator of the Herbarium, who has been ill now for eighteen weeks (see p. 271 ante) died at 2:30 this afternoon, Wednesday, June 6, 1928. He had his ninetieth birthday in January. He was too feeble to get well and death came as a blessed release to the bodily sufferings of the last weeks.

— Cont from bottom p. 359. It is a fine sight to see the pack train of Thornton and Ely come into camp at Lake Florence — the fine black mares stepping freely and proudly as if disdaining their loads, the riding animals spirited and eager, — all moving quickly along at a rate that will cover 18 to 20 miles a day on the mountain trails. Contrast this with the plodding tourist outfits that must travel ten or twelve hours to get as far.

Tiburon, June 10, 1928
Marin Co.

— Went today to Tiburon, with the field party of the California Botanical Society. Tiburon has changed a great deal since I went botanizing there long ago with Professor Greene. Have I been there since going with him on July 20 1891? I cannot well recall but probably not. There were one or two houses there in 1891; now there is something of a settlement scattered all along the shore for some distance, but the bare brown rocky hills rise just the same from the shore line and afford fine botanizing. There are a number of springs or springy places on the hillslopes, and about these, in particular there is excellent botanizing. Each springy place has mostly its own species; or

, the most interesting species we found in only one place.

No. 12,915. Eriophyllum
Steep rocky bluffs
on the bay shore.

No. 12,916. Convolvulus luteolus
Gray. Cor. white, pinkish
on the exposed folds outside.
Climbing shrubs on the bluffs.

No. 12,917. Convolvulus luteolus
Gray. Dry grassy open hilltops.
Stems as much as 8 ft. long.
Cor. white, the exposed folds outside
brownish.

No. 12,918. Lupinus densiflorus
var. laetus The flowering racemes
are erect; after flowering the
raceme spreads outward, at
last when the fruits are ripe
or near ripe, becoming horiz-

ontal, – that is at about right
angles to the stem on which it is
borne.

No. 12,919. Eriogonum nudum
var. auriculatum Sometimes the
flowers are pinkish-red; mostly
they are white. Bluffs and rocky
slopes.

No. 12,920. Monardella villosa Bth. var.
neglecta Greene. Corollas lavender. Rocky
slopes. Only one clump seen.

No. 12,921. Calycadenia multiglandu-
losa DC. ssp cephalotes Gray
The rays are white,
broad, somewhat [Cont. p. 352).

Tiburon, Marin Co.

No. 12,922. Cotyledon farinosa (=Dudleya) Baker. Corolla pale cream, not angled, or only slightly. Rocky outcrops. There is a little rock offshore a few yards, not far from Tiburon station, that is covered with this on the leeward side. Corolla cylindric in outline; the petals acute or not turned outward or only slightly. The ovate petals are broadest a little above the middle, acute.

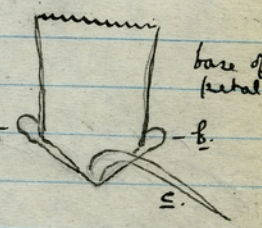
No. 12,923. Juncus
Moist hillslope swale.

No. 12,924. Eriogonum ~~sinuatum~~ ~~var~~ caninum (greene) Munz
This, in the field, is suggestive of E. dasyanthemum in some ways. Perianth pink; outer segments obovate, obtuse; inner segments oblong, obtuse, not narrowed toward base or only ~~slightly~~. Cont. p. 350.

No. 12,925. Linum congestum
Dry rocky or gravelly hills
Plants in flower were found later in a moist area.

No. 12,926. Linum congestum Gray.

Base of petal. The appendages are three, the middle one stands erect, this I have turned it down to show its length. Cont. p. 350.



No. 12,927. Chlorogalum pomeridianum. This grew rather commonly on a northeast slightly moist grassy slope. One of my specimens has a bulb stalk so young that it is without

fibrous covering. The flowers are practically all closed now, at this hour, but are so purplish that I was misled at first into thinking the plant was not "pomeridianum". Indeed the flowers seem quite different from the form I am most used to — that in the Sacramento Valley of Solano County.

No. 12.928. Zygadenus venenosus = z. micranthus Eastw. Wats. var. micranthus Jeps. Moist or springy places. First coming into flower; not yet in flower well at some of the spots in the hills where we found it. This is another plant which has troubled me. The ordinary Zygadenus frequently grows on woodland slopes or brushy slopes in the hills. It

flowers early — in February or March. Here is this thing, then, which is indistinguishable from it as to the flower, developing its inflorescence in June and doubtless later. The inflorescence is nearly always branched, that is the main raceme has some short branches.
Cont. p. 351.

No. 12.929. Stachys pycnantha Bth. Flowers white; the lower lip of the corolla with brown or purple dots. Calyx-teeth short, equal. Cont. p. 350. Leaves very "bullate", this feature disappearing on pressing.

No. 12.930. Epilobium adenocaulon Haussk. Springy spot. Corolla pale, turning pink.

No. 12.931. Brodiaea peduncularis Corolla, that is perianth, nearly white inside. Outside the midribs are purplish; so that

the pressed flowers, which show only the outside, may have misled many describers of this species as to color. The ovaries are conspicuously yellow

[Cont. no. 12.929. Upper lip cleft 2/3 the way down; stamens: lower pair longer a little, all four with discrete stiff short hairs on lower side at throat. Throat of corolla with defexed hairs on the outside.]

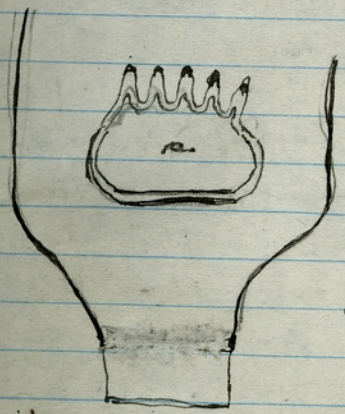
[Cont. no. 12,924. All perianth segments with a conspicuous brown nerve ending just short of apex. Perianth glabrous.]

[Cont. no. 12.926. The buds are pink or rosy, but the petals in anthesis are pale, that is dull white, with very little if

any pink. I suspect the flower color as described * may be due to observing pressed flowers in which the pink buds have preserved their color. Petals obovate, obtuse. Calyx slightly hairy, the hairs gland-tipped. a, b, c = appendages.

* in Fl. W. Mid. Cal; corrected in Man.

— Cont. no. 12,928.



Base of inner perianth segment, showing gland, 5 notched above.

The inner perianth segments are more distinctly clawed, longer-clawed than the outer. The claw

Tiburon, June 10, 1928

of the inner has its edges obscurely turned up a little, making a sort of border. The claws of the outer segments are very short, and hardly observable as claws. The gland area ("a") has a distinct cord-like border which is 5-notched on the upper side.

[Cont. no. 12,921. trefoil-shaped, with the middle lobe hardly ½ as broad as the lateral, the lateral spreading at right angles to it. Dry hills, very abundant and showy.

Berkeley, June, 1928.

– Leo Hitchcock, student from Pomona College, called to day to look at many types of Godetia. – June 14. 1928.

Solano Co.

Suisun, June 25, 1928.

No. 12,932. Agrostis semiverticillata (Forsk.) C. Christ
(Det. Beecher Crampton, Nov. 1925)
This grass grew in fairly heavy tufts in the salt marsh. Culms from a perennial rootstock.

No. 12,933. Jaumea carnosa Gray.
This species forms pure-stands in some places in the salt-marshes, spots 5 to 30 yards in diameter

No. 12,934. Scirpus campestris Britt. = S. robustus Pursh.
Edges of salt-marsh at Cordelia in saline soil.

[The above three numbers were collected on a trip to Little Oak Ranch.]

San Francisco, June 28, '28

I lectured on "Our Native Trees" at the National Conference on State Parks at the Mark Hopkins Hotel. John C. Merriam, of the Carnegie Institution was present; Stephen Mather, U.S. Director of Parks; M. B. Pratt, State Forester. And also Miss Pearl Chase, Santa Barbara; Mrs. Robert Hunter, Carmel; Duncan McDuffie, Chairman of California States Park Council. Pratt, curiously enough, reminded me of my talk on the desert at University meeting in 1916. It is remarkable how many persons remember that meeting and what I said. Well, I was fresh from my first all-winter experience in the desert. With Pratt was the Superintendent of the Capitol Park

Berkeley, July, 1928

at Sacramento, Wm. Vortriede. He is a short stocky German with a pleasant manner. For him has been named Chorizanthe vortriedii Bdg.

— came to call this morning Prof. W. W. Lepzackin of the University at Prag. He says University Professors are paid $50 to $70 per month in Prag. Being a Russian he, himself, is paid $50 m. German professors have been very badly off but are now getting along better: $150 m. to $200 m. Wages in Czecho-Slovakia, ordinary labor, $2 m. to $4 m. a month. He regards living conditions in Russia as very bad: often two families in a single room. The government owns all the houses, but no new houses are being built because the government

356

has no money to me for building. In Czecho-Slovakia the condition of the farming peasant would be insupportable from our standpoint – sleeping in huts with the farm animals. – July 13, '28. Professor Lepeschkin is stopping at 2523 Ridge Road, Apt. 211, and will be here until Christmas. He is also delivering some lectures at Stanford University. He is a Russian; has a brother in Moscow; this brother's wife writes him that conditions in Moscow for them are terrible. – Professor Wladimir W. Lepeschkin.

357

– Collected the following on a trip to Stanford University:

No. 12,935. Verbena robusta Greene. Coyote Hills. Dry ground. Alameda Co.

No. 12,936. Picris echioides L. Coyote Hills. Dry ground.

No. 12,937. ~~Bantromadia~~ = Hemizonia pungens (H. & A.) T. & G. Redwood City. San Mateo Co.

No. 12,938. Salvia aznavides Bth. Dry (very hard) blue adobe east of Redwood City. The root-stocks are very fleshy (and very white), more so than I have ever before noticed in this species, it seems to me. This locality is very low and was very wet in winter and spring.

No. 12,939. Anthemis cotula L. Redwood City.

– From labels on sheets in the Dudley Herbarium I noticed

today that:
- W. R. Dudley did not number his specimens methodically or systematically. He collected many specimens which he did not number at all.
- Volney Rattan gave his herbarium to Stanford University in 1903.
- Arabis blepharophylla H & A. No. spms. in Dudley Herb. south of Montara Mts. We have none in U. C. hb. from Monterey. What is the basis for "Monterey" in Syn. Fl. 1v:161? Perhaps a slip on the assumption that Douglas got it there? Douglas might as easily have had it from San Francisco. {Hooker, Bot. Mag. t. 6087, cites S.F.!
- Arabis nemophila Greene; "Luther's Pass, Lake Tahoe region, Abrams 4763." Good match; compared with type — L. A. R. I had

previously compared this species description with A. rectissima Greene and reduced it. So, the reduction will doubtless stand. {See vol. 49, p. 134.
- Arabis arcuata Gray. A plant from Strawberry Lake, Grant Co., Ore., Morton E. Peck 10,278 is labeled "arcuata". Superficially like arcuata but pods not so long nor so spreading-sprawling. Not arcuata. I find no spms. of Ore. or of the deserts or of Nev. that I take to be arcuata.

- Cont. from p. 479 bottom. horse, quite bare. Many persons who go into the mountains do not know how to take care of animals, so that the companies that hire out animals have only poor horses for hire. Good looks is not essential in an animal for a botanist but reliability. Mustang stock is useful for its hardiness. Animals must be newly shod. Hotels and resorts send out animals with shoes on too long, hoofs overgrown on the shoes. A botanist should avoid getting stock at such places. While a botanist cannot afford fine pack animals, he may admire them. [Cont. p. 342 ante]

Berkeley to Friant.

Fresno Co.

— Left Berkeley by car at 10 o'clock this Friday morning. Drove to Tracy, thence down the west side to Newman and turned off on ↑nearly the Livingstone road east, crossed the San Joaquin River, then [in a mile or so] the Merced River and east to a point on the Valley Route Highway north of Atwater. (Cont. p. 373). (cf. vol. 32, p. 108 as to bridges)

No. 12,940. Helianthus

Tracy. (also Common east of the river between Merced Bridge and Stevinson.

No. 12,941. Sida hederacea Torr. Cont. p. 370. Merced River bridge east of Newman, (that is w. of Stevinson, Merced Co. In low land.

No. 12,942. Grindelia

Heads smaller than in G. camporum. Rays ascending in anthesis; in age closely

reflexed. (Cont. p. 390).

No. 12,943. ~~Erigeron~~ Conyza bonariensis (L.) Cronq. About 1/3 of the plant taken; bushy branching from base with erect or ascending stems. Stevinson. Merced Co.

No. 12,944. Salsola kali var. tenuifolia About 1/5 of the plant taken. Stevinson.

— Southerly on the highway to Madera, thence on a long east and west road over the undulating plain, the type of plain that borders the Sierra foothills. Bowing southerly on the highway then eye roved east to the ghostly foothills lying under the vague deep indigo shadows of the Sierras above them. Now, on this long east road, a "country" with little travel on it, one has more chance to

observe the country: the lonely wheat ranches, the house and barns without a tree near them — or elsewhere — isolated by long distances with a ranch here and there quite deserted — the ultimate word loneliness, dreariness, misery. I see a coyote trotting northerly through a grain field, his kill (a jackrabbit) much in evidence even at this distance as he carries it along. Hearing the sound of my machine, he stops to regard me curiously; I stop to study him to better advantage. Almost at once he gallops on and disappears. He plans to take no chances from a rifle or gun. {an account of this road in my "Old-time Days in Yosemite Valley" p. 35.

July 20, 1928

3 mi. w. of Table Mt., Madera Co., on Madera Friant road, 360 ft.

A short distance beyond this I stop to collect nos. 12,945 to 12,948 in a little hollow, a sort of bench by a dry watercourse in a short curve of the road.

No. 12,945. Eremocarpus setigerus Bth. Sandy stream bd.

No. 12,946. Eriogonum roseum

Involucres rather densely and closely arachnoid, the teeth white-triangular, short (about 1/5 as long as the tube). Perianth pinkish-white: outer segments obovate, obtuse, inner ones linear-oblong, or flat of the stream bench (see above).

No. 12,947. Eriogonum gracile

Involucre sparsely pubescent, the broad ribs and teeth nearly glabrous. Teeth ovate, nearly 1/2 as long as tube. Involucre about 1/2 as long as involucre of 12,946

These plants grow in a colony mixed with plants of 12,946. In habit, general pubescence, leaves, the two are similar. No. 12,947 looks like a smaller edition, a minor form, or perhaps an undernourished state of 12,946. It is only on examination with a dissecting microscope that certain differences become clear. The two are distinct species I do not doubt. Yet the flowers of 12,947 have obovate outer segments and linear-oblong inner ones with obtuse apices in both cases; they are quite like those of 12,946, but the flowers of 12,946 are twice as long as those of 12,947. Yet the shape of the perianth, the peculiarities of form in the two appear to be quite the same.

- As I travel this long east and west road I observe plenty of Sparrow hawks and one fine specimen of the Brown-tailed hawk. Then I strike a traveled north and south road (Fresno-Coarse Gold road) turn south on it, soon turn east and through lonely country and come in behind the southerly point of the little range of Little Table Mt. and within sight of Marydale School (see p. 331 supra) as I travel northerly over poor country roads, and then easterly to Friant where I go into camp by the river's edge (San Joaquin River) for the night.

- No. 12,948. Gnaphalium palustre with 12,945.

Friant, across river in Madera Co. Fresno Co. 375 ft.

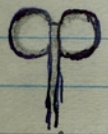
No. 12,949. Salix melanopsis Nutt ♀. River gravel bench.

No. 12,950. Salix melanopsis Nutt. ♂. River gravel bench

No. 12,951. Boerhaavia hirsuta Willd. = B. coccinea (to 15) Head or cluster of 5 flowers. Calyx a lix but very deep purple. Limb as if ruffled: the sinus with a "cleft" intruding bay, that is a very narrow sinus as if made with a knife blade; lobes truncate or truncatish with a hairy mucro or apex point. Stems trailing out over the ground, 3 to 5 feet long, from a central perennial root-crown. Benches and bench slopes of the river. Calyx fruiting base 5-ribbed!! the ribs covered with short-spreading gland-tipped hairs

July 21. 1928

The flower clusters certainly as a whole or as single flowers have no involucre but each flower has one or possibly 2 bracts but in no case in a circle! if two, apparently always on different axes of the closely branched, head-like cluster. The genus and species, therefore, appears to be Boerhaavia hirsuta Willd., an addition to the San Joaquin Valley. Calyx campanulate above ovary! Anthers crimson, shaped so:



anther.

Stigma circular. Flower 2 mm. long. Perianth lobes may be a little retuse. Lower part of calyx (over ovary) mealy-glandular! Bont. p. 478.

No. 12,952. Cucurbita palmata Watts. Dry river bench.

— Lotus scoparius. Rocky hills east of Friant. Photo.

— Eremocarpus setigerus

About 2 mi. east of Friant, on flowed land. Photo taken.

368

Auberry, about 6 mi. above
Locality = just above Beal Ranch

-Carpenteria californica Torr.
Shrubs 8 to 16 ft. ht. with
erect stems from near the
base. Main stems 2 to 3 in.
in diamter. Bark on main
stems very smooth, exfoli-
ating in broad yellow
sheets. Shrubs past flower,
but the inflorescences hold-
ing many of the persistent
sepals. The exfoliating bark is
almost the color of buckskin;
soft and fairly pliable. The
shrubs, about a dozen are in
the bottom of a scarcely dis-
cernible winter rivulet on
the open western slope of a
mountain side at about
2 600 feet, the slope rather
closely wooded with Quercus
wislizenii, Pinus sabiniana,

J. K. M. Sunsley in litt. 3-19-32

July 21, 1928.

369

Rhus diversiloba, Aesculus californica
Arctostaphylos, mariposa, Umbella-
laria californica.

The shrubs are really bushes,
characteristic chaparral type,
many stemmed from the ground,
forming much spreading bushes
in most cases. Stems ½ in.
to 1 in. diam. near ground. The
individuals first described (p. 368)
were quite large open ones and
evidently much older than
the characteristic smaller
shrubs. The station is above
Auberry on road to Shaver Lake,
I roughly guess about six
miles above Auberry. My trip
gauge is now 64 miles.

-No. 12, 953. Carpenteria californica
Torr. The leaves are somewhat
revolute from both edges,

resulting in a somewhat narrow leaf from the standpoint of insolation. The leaves are rather in clusters on the new wood below the inflorescence and hang down, so that the branches at this time have a characteristic aspect which is imparted to the whole shrub. See p. 368

c. 2900 ft.

No. 12,954. Staphylea bolanderi Gray. Above Auberry. c. 2900 ft.

No. 12,955. Eriogonum roseum Per. pale sulphus. Opens in pine woods.

No. 12,956. Lessingia

With 12,955.

— Cont. from p. 360 (no. 12,941). This is in Merced Co., w. on a little nw. of Stevinson.

No. 12,957. Asclepias eriocarpa Bth. The colony studied is at the top of the hill above Auberry in Pinus ponderosa forest — a large colony in an open, the plants showing abundantly every stage from unopened buds to young fruits. A large wasp with black body and large burnt umber or brown wings is feeding on the flowers. He is sucking the honey from the horns, usually not draining more than 2 of the 5 in the circle of a flower. To drain one horn takes him a matter of 40 to 60 seconds. I could not perceive that these insects effected pollination. Neither their legs nor their mouthparts were

entangled in or drawn through the slits. Large numbers of these insects are working on the flowers. This is the same insect that I observed working on this same milkweed at Columbia in Tuolumne County in 1915. It is, too, I believe, the same insect that I observed on Asclepias subulata Dec. along the Colorado River in 1913. Cont. p. 380.

- Pterospora andromeda Nutt. Mt. slope above village.

No. 12,958. Eriogonum roseum
Pale sulphur perianth.
Granite sand, Big Creek sta.

No. 12,959. Eriogonum spergulinum var. spergulinum
Granite sand, above Big Creek sta., towards Huntington Lake.

No. 12,960. Hulsea brevifolia
with 12,959.

- From Auberry I climb up to Alder Spgs., Pine Ridge, & Shaver Lake and down into the gorge of Big Creek. Then I sleep Saturday night in camp on the promontory of rock that extends out from the village street of Big Creek village, perched on the side of the cañon wall, with some hints of "Yosemite" domes on the cañon wall above. Next morning, Sunday, I climb by the steep grade to Huntington Lake. See p. 374. See bottom of page.

- Cont. from p. 360. The road across the valley from Newman to Atwater: Eucnide foetidissima, east of Newman near Merced River bridge. Heterotheca grandiflora, very abundant in sandy land near Stevinson.

- I go direct to Snyders camp (Mrs. Harriet Snyder and Elese Kelley. See bottom p. 376. Mr. Peter Snyder has not yet arrived.)

Huntington Lake, 7050 ft.
Fresno Co.

No. 12,961. Gnaphalium palustre
Tamrac Pine swamp.

No. 12,962. Polygonum kelloggii Greene
with 12,961

No. 12,963. Phacelia racemosa (Kell) Gray
det. Reb 1/27/55 Bdg.
with 12,961

No. 12,964. Polygonum
with 12,961.

No. 12,965 Gayophytum ramosissimum T. & G.
with 12,961.

No. 12,966. Dodecatheon
Tamrac Pine swamp.

No. 12,967. Agrostis idahoensis Nash.
(det. B. Crampton, Mar. 22, 1972)
This grass in Tamrac Pine swamp.

No. 12,968. Deschampsia elongata
Culms all geniculate towards base, a purple encircling band at the knee or node. Tamrac Pine swamp.

No. 12,969. Muhlenbergia filiformis Rydb.
This grass grew in

July 23, 1928

a moist spot in the shade of Tamrac Pines.

No. 12,970. Phalacroseris Bolanderi Gray. Tamrac Pine swamp. I criticize the diagnoses in my Manual, as follows: "tuft of basal leaves on the root-crown". The last three words are unnecessary. But if it is desired to contrast with Aspargidium of similar habit but with root-stocks, say "on the crown of the tap-root."

The involucral bracts are equal, in one series, or essentially so. They do overlap a bit, but they are united at base into a cup which is quite deep. I do not use "naked" in related genera and perhaps it were better omitted: Involucre campanulate, its 9

to 16 bracts equal, nearly in one series and united at base into a common cup, naked or with 1 or 2 small loose or rudimentary bracts at base. "Flowers yellow, opening in sunshine". But most genera Cichoriaceae open only in sunshine. Eliminate last three words. Heads 3/4 to 1 in. broad. Achenes obscurely incurved. It would be desirable to add breadth of heads in anthesis to all Cichoriaceae genera where practicable, as a matter of helpfulness to use in determination. Achenes with a crown of small scales, quite minute.

— At Huntington Lake I am received into the hospitable camp of Mr. and Mrs. Peter Snyder (formerly Mrs. H. P. Kelley) and Mrs. Snyder's daughter Elsie, by the lake shore at Cedar Crest.

No. 12,971. Vaccinium occidentale Gray. Tamrac Pine swamp.

No. 12,972. Draba stenoloba Ledeb. Stems 1 to 3 from the rosulate basal tuft, naked or with only 1 or 2 leaves above the basal rosette. Moist Tamrac Pine woods.

[No. 13,331. Linanthus harknessii Greene. Moist Tamrac Pine woods. Huntington Lake. July 23.]

No. 12,973. Carex Open swamp.

No. 12,974. Gentiana simplex Gray. With 12,973.

No. 12,975. Pedicularis attollens Gray. With 12,973. The spike is barely pubescent, not woolly.

No. 12,976. Juncus mertensianus Bong. ssp. mertensianus With 12,973.

No. 12,977. Helenium bigelovii Creek-side, in rocks.

No. 12,978. Juncus mertensianus Bong. ssp. gracilis (Engelm.) E. J. Hermann Sand fills between

Huntington Lake, Fresno Co.

No. 12,978A same 7050 ft.

boulders by creek side

No. 12,979. Spiraea densiflora Nutt.
By creek side.

No. 12,980. Navarretia divaricata (Torr.) Greene Dry sandy floor beneath open stand of pines

No. 12,981. Gayophytum
Corolla white, in age or drying red. With 12,980

No. 12,982. Linanthus harknessii Greene. With 12,980.

No. 12,983. Linanthus ciliatus Greene. With 12,980.

No. 12,984. Apocynum pumilum Greene. Rocky rifts. Cor. lobes curving outwards horizontally. Cor. constricted a little just under the lobes.

No. 12,985. Antennaria
With 12,980.

No. 12,986.
This grass grew with no. 12,980.

July 23, 1928.

No. 12,987. Kelloggia galioides Torr. with 12,979.

No. 12,988. Poa bolanderi Vasey
This grass grew on the slightly moist flat by the stream side.

No. 12,989. Trisetum projectum Louis-Marie
This grass grew with 12,988.

No. 12,990. Lonicera conjugialis. With 12,979.

No. 12,991. Rumex acetosella L. With 12,988.

(cf. p. 376 at bottom).

- Today we went in a small motor row-boat to the upper end of the lake, to the entrance of Big Creek. Here I collected nos. 12,961 to 12,991.

Huntington Lake, Fresno Co.
July 24. 1928

- Ceanothus cordulatus Kell.
- Arctostaphylos patula Greene.
- Prunus emarginata Dougl.
- Castanopsis sempervirens Kell.
- Cont. no. 12,942. This appears to be wide-spread, but never abundant, usually not common, south to Mendota and east to Friant, or near it.

- Cont. from p. 372 (no. 12,957). The leaves in one of my sheets have acutish or obtuse base. cf. diagnosis in Man. p. 773. Note also that this colony is in an open in the forest - not in a "dry barren valley". The station is a mile or so westerly from Corlew Mdw.
↑ bar 12.957

July 25. 1928.

- Started from Cedar Crest about 8:30 and drove to Will-o-Wisp where I left the car and started up Billie Creek at about 9:15. At the head of Billie Creek I cross the divide to the watershed of Line Creek. Just on this divide is a great area of Astragalus bolanderi Gray in an open in the forest (see p. 384). One of the extremely abundant species through the Red Fir forest is Senecio (no. 13,001). One comes to a fork in the trail, the left-hand trail signed to Vellie Lake. The right hand one leads to Poulton Mdw. which is signed to left. The trail, beaten by cattle, leads left, but by scouting around I pick up the trail to Kaiser Peak which leads along a small but living stream bordered

[Cont. p. 396]

Billy Creek, Fresno Co.
~~Huntington Lake~~ 7500 ft.

No. 12,992. Arabis rectissima Greene.
Open pine woods, sandy soil.
Stems simple below, simple above or branched into 3 racemes above. Cross-sections of the stem below the leaf rosette show 2 wood rings, proof the biennial character. There are vestiges of last years leaves, but it would be possible to interpret these as early leaves killed by the overshading leaf rosette.

No. 12,993. Erigeron breweri Gray
Open pine woods, sandy soil. Spreading by rootstocks and forming small colonies.
Rays violet, 16, 17, 20.

No. 12,994. Silene lemmonii Wats.
Stems arising from the underground crown of a fleshy narrowly-fusiform root.

July 25, 1928.

Segments of petal limb linear. Scales linear, spreading horizontally with the petal limb. Scales or appendages at summit of claw into 4 segments, the middle scales forming a middle pair, the outer or lateral ones forming the other pair. Middle pair the larger, the other pair scarcely ½ as long and ⅕ as large as the middle pair. Segments linear, in case of both pairs.

Limb cleft into 4 linear segments, the outer 2 smaller, all involved from the tip during the day. Flowers pendulous or spreading horizontally.

The petal claws are dilated and very long woolly; the filaments are likewise dilated and also quite woolly. I do not notice any "auricles, broad

and rounded". (cf. Man. p. 367). The "scales" of Man. diagnosis are interpreted as 2, each 2-cleft.

No. 12, 995. Lupinus latifolius Agardh. var. columbianus C.P. Sm. Bush-like plants, many unbranched or scarcely branched stems arising from the root-crown. Lower part of keel-petals ciliate, Corolla light blue or dull white. Billie Creek.

No. 12, 996. Astragalus Bolanderi Gray. Cor. dull white, the banner longer than the keel and wings, cleft at the obtuse apex. Forming great colonies in open spots in the fir forest, on sandy slopes or flats. Abundant for many miles on the trail to Doulton Mdw. Pod almost completely 2-celled. (cf. Man. p. 568). See p. 429.

No. 12, 997. Sprague umbellata Torr. Polyptridium Sandy opens in the fir forests, very abundant. Fls. pink.

No. 12, 998. Scorzonella nutans Greyer. Moist spots in the forest, open firs. Achenes ribbed, awns 18, plumose, paleaceous at base.

No. 12, 999. Eriogonum nudum Benth. var. deductum Sandy open fir forest. See p. 429.

No. 13, 000. (Discarded, insect damaged)

Sandy open fir forest. Rare. Only half-a-dozen individuals noticed all day. Rays brown-yellow, 14, 15, 15, 16. Herbage glandular-viscid.

No. 13, 001. Senecio integerrimus var. exaltatus (Nutt.) Cronq. Extremely abundant for many many miles in

Line Creek, Fresno Co.
8000 ft.

the open fir forest between Daulton Mdw. and Billy Creek.

No. 13,002. Lupinus albicaulis Dougl. Abundant in the open forest between Daulton Mdw. fir and the head of Billy Creek, in colonies.

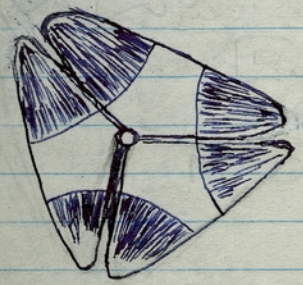
No. 13, 003. Allium

Pine forest.

Crests over a single ovary cell; they suggest a pair of wings and are almost black except where they unite on summit of cell.

Perianth pink. Anthers red-brown.

This sketch of the ovary crests as



seen from above is pretty rough but gives the idea. It would be satisfactory if all 3 of the units were the same size and shape, because then they would fit together and make a perfect symmetry. The unshaded part is greenish, the shaded part almost-black.

Kaiser Crest, Fresno Co.

388

9800 ft.

No. 13,004. Delphinium
In rock crevices, Daulton
Mdw. Fls. dark blue.

No. 13,005. Streptanthus tortuosus var. orbiculatus Hall. Sandy open hill
Crown. Near Daulton Mdw.

No. 13,006. Arabis platysperma
with 13.005

No. 13,007. Castilleia pinetorum
Kaiser Crest

No. 13,008. Eriogonum incanum.
Kaiser Crest

No. 13,009. Erigeron breweri var. breweri Kaiser Crest. Purple rays.

No. 13,010. Orobanche
Kaiser Crest.

No. 13,011. Polemonium pulcherrimum Hook. Under Pinus
albicaulis. Kaiser Crest.

July 25, 1928.

389

No. 13,012. Crepis intermedia
Kaiser Crest.

No. 13,013. Hieracium horridum
Kaiser Crest.

No. 13,014. Arenaria nuttallii Pax.
Kaiser Crest.

No. 13,015. Silene
Kaiser Crest.

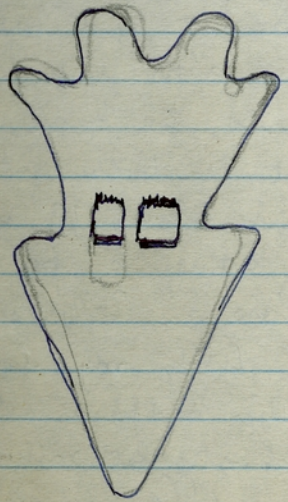


diagram of petal. Scales subquadrangular, toothed on upper edge. Pets. brown-veined, and a little brownish-tinted on a white ground.

Calyx-tube with a broad purple

Kaiser Crest, Fresno Co. 9800 ft.

vein running into the calyx-lobes, a narrower vein in the intervals ending in the sinus.

=Ivesia santolinoides Gray

No. 13,016. Potentilla santolinoides Greene. Calyx-cup (hypanthium) filled with a frieze of regularly horizontally arranged hairs. These hairs are straight and seem, as seen from above with a lens in the field, to pack the tube, all pointing to the central style. Stamens about 18, with somewhat kidney-shaped dark purple anthers. Rocky ridge, Kaiser Crest. With my low power lens the anthers seems to have a short slit rather than a "pore". Must be examined in the laboratory with a high power.

July 25, 1928.

No. 13,017. Silene Rocky slopes. Kaiser Crest.

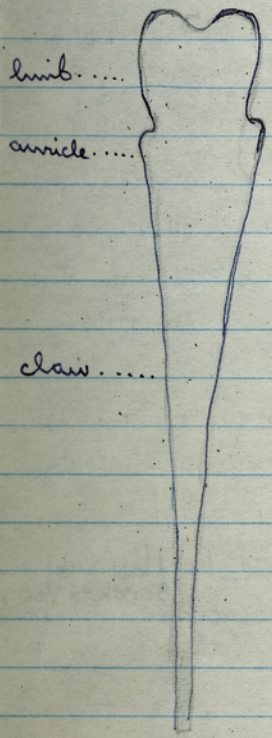


Diagram of petal.

Petals brownish white, the limb merely retuse at apex; no scales; with small auricles

The petals are much smaller than in no. 13,015.

Kaiser Peak, Fresno Co.
10,000 ft. July 25, 1928.

No. 13,018. Raillardella argentea Gray
Rocky slope.
Coit. p. 400.

No. 13,019. Arabis lemmonii
Wats. Rocky slope.

No. 13,020.
This grass grew on a rocky slope, wedged in between the broken rock.

No. 13,021. Macronema discoidea
Nutt. Rocky slope

No. 13,022. Macronema suffruticosa Nutt. Rocky slope. Rays 2, 3, 1, 0, yellow.

No. 13,023. Poa scabrella (Thurb.) Benth. ex Vasey
(det. B. Crampton, Mar. 1973). This grass grew on the rocky slope.

No. 13,024. Phacelia frigida
Greene. Rocky slope.
Corolla dull white.
See diagram of corolla-scales on next page.

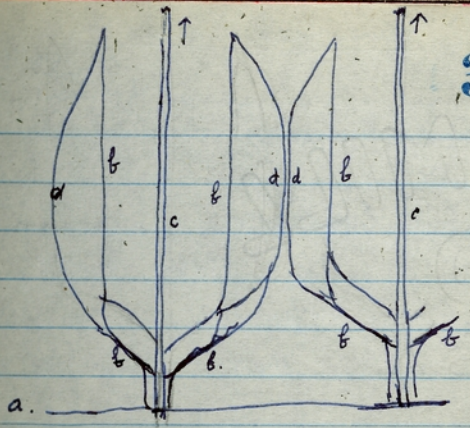


Diagram of scales in corolla, no. 13,024.

a. = base of corolla
b. = line of attachment to the corolla of the scale which is more or less vertical. The scales are attached to base of filaments; a short distance above base of filament they go off at an angle and then straight upwards vertically.
c. = filament, broken off above at ↑.
d. = edge of vertical portion of scale, convivent with edge

of adjoining scale and so forming a pseudo-tubular passage.

No. 13,025. Eriogonum incanum
Rocky slopes.

No. 13,026. Lupinus breweri Gray.
Matted plant on rocky slopes.

No. 13,027. Chaenactis
Corollas cream-white, aging soon reddish brown.
Sandy soil.

No. 13,028. Monardella odoratissima Bth. Corollas pink. Rocky slopes in good soil.

No. 13,029. Erysimum asperum DC. = E. capitatum (Dougl.) Greene
This crucifer seems to be three years old, certainly two years. Rocky slope.

No. 13,030. Juncus
Broken-rock slope, in crevices between the rocks.

No. 13,031. Trisetum spicatum (L.) Richt.
This grass grew with no. 13,030.

No. 13,032. Saxifraga tolmiei T. & G. var. bidifolia Engl.* Broken-rock slope, forming mats, rare. Petals 5, white, narrow-oblanceolate, acute. Stamens 10, dilated upward, so as to be markedly or conspicuously dilated, that is narrowly linear-oblanceolate, the black anthers small. Carpels 2, sometimes 3. Calyx-lobes dull white, with a burnt umber or reddish brown center. Carpels united below. Leaves 3 to 6 lines long, linear or spatulate-linear. Petals 3 to 3.5 mm. long, the stamens a trifle longer. Bright-red capsules.

* Cont. from p. 363. This point is shown on Tanes Bridge quadrangle 3 mi. W. of Little Table Mt., on Madera-Kriant road.

Daulton Mdw., Fresno Co.
8600 ft.

No. 13,033. Castilleia miniata Dougl.
Bracts crimson.
Stream side near Daulton Mdw.
Fine tall showy plants, 2½ to 2¾ ft. h.

No. 13,034. Senecio triangularis Hook.
Tall plants (3 to 3½ ft. h., by stream edges. Near Daulton Mdw.

Cont. from bottom p. 381.

by fine plants of Senecio (13,034) and Castilleia (13,033). The trail strikes up a slope over a large open barren sand area. The trail is not clear but I keep my general direction and pick up the trail as I gain the rocky slopes of Kaiser Crest. Soon high montane and subalpine plants come in: Saxifraga

tolmiei Ftg., of which I see only two small colonies; Juncus (13,030); and two species of Macronema, M. discoidea Nutt. (13,021) and M. suffruticosa Nutt (13,022). Along this crest is fair botanizing. Magnificient view, across the great basin of the San Joaquin River, is afforded of the Merced group, Mt. Merced, Mt. Lyell, Mt. Ritter and Banner, while the long line of peaks on the main Sierran axis begin to come into range of the eye. I am now on a high summit and see the sharp point of Kaiser Peak across an intervening saddle. It is getting late 5 o'clock and I hesitate about going so far lest darkness catch me on the complex of trails between Daulton Meadow and

the head of Billie Creek. Hereon I calculate closely, leave my collecting press on an intervening ridge and reach the summit by 5:20 through sharp climbing. Here is a vantage point of unusual splendor: the whole range of peaks from Mt. Goddard and the Evolution group northerly to Mt. Hilgard

Ascent of Kaiser Peak.

I get back to the point where my press is left by 5:45 and go down rapidly, taking a dog trot or run wherever possible. When I come to the sand slope it will save time not to miss the trail on its lower side, and so, since I am started right

at the beginning I find that the trail can be faintly seen by watching closely. There is nothing to indicate it except a sort of shadow left by the use of previous years. It is a sort of "tone" which one can follow along. If one were off it and searching for it, I think it could not be picked up, the working of the area by cattle feet has been so uniform all over it. So, thus watching, I pick up the beaten trail in the forest below and return in good time to Paulton Meadow. There I hurry to gain the head of Billie Creek. Once I am in the headwaters of Billie Creek I know that the only trail is down and one cannot get out of this canyon. So I follow it down in the darkness.

Line Creek, Fresno Co., July 25.

– On the watershed of Line Creek between head of Billie Creek divide and Daulton Mdw. I note the following: Sarcodes sanguinea; Phalacrostris bolanderi, this very abundant in open meadows in the fir forest; Arctostaphylos nevadensis Gray about half-way between Daulton Mdw. and Billie Creek divide, only a little of it; Veratrum californicum Dur.

– Cont. from p. 392. No. 13,018. The decumbent branches from the crown of the tap-root send down a series of fleshy-fibrous roots. This fact in a way vitiates the difference indicated in key in Man. p. 1145, and yet a root difference might be expressed in other terms,

Huntington Lake, July 28, 1928

7100 ft.

as between R. argentea and R. scaposa.

No. 13,035. Deschampsia caespitosa (L.) Beauv.

This grass grew by moist edges of swampy mdw.

No. 13,036. Lotus oblongifolius Greene var. ~~torreyi Ottley.~~ nevadensis with 13,035. Banner yellow; keel and wings dull white, gaping far apart from the banner. Calyx-teeth subulate, longer than tube. Pets. and stamens inserted distinctly above base of calyx cup!

No. 13,037. Carex

Forming a large and almost pure colony in the swampy meadow between Will-o-Wisp store and Cedar Crest store

No. 13,038. Spiranthes porrifolia Lindl. wet meadows.

No. 13,039. Aster andersonii Gray. This is one of the most distinctive Aster species in California. Its scape-like stems ending in a single large head which in fruit becomes a globose head of expanded achenes and pappus. The achenes are nerved longitudinally; the pappus-bristles somewhat tawny, covered or rather bearing short hairs. These hairs are not long enough to be called "plumose", and in any event are borne all around the bristles instead of in 2 rows as in plumose states. The achenes are a little curved and puberulent. In the sedgy meadow-swamp this species is most striking

in fruit, showing best its distinctive character.

This species, no. 13,039, was named after Dr. C. L. Anderson while he was resident of Carson City. It is a distinctive species to keep his memory clear in the Sierra Nevada. The fleshy root is cylindric a marked feature of the plant. Rays lavender, 17, 19.

No. 13,040. Carex

This small sedge is not rare in the meadow but is rare in fruiting stage at this time.

No. 13,041. Vaccinium occidentale Gray. Swampy mdw.

No. 13,042. Phalacroseris Bolanderi Gray.

No. 13,043. Senecio scorzonella Greene

edge of swampy meadow. Rays none.

No. 13,044. Potentilla = Ivesia unguiculata Gray unguiculata Greene. Moist edges of meadow. Petals truncate or truncatish! Pistils 3! See p. 407.

No. 13,045. Carex

Colonies in swampy meadow.

No. 13,046. Carex

Swampy mdw.

No. 13,047. Muhlenbergia filiformis (Thurb.) Rydb. This grass, very inconspicuous, was noted only in one spot and while collecting other things in the swampy mdw.

No. 13,048. Muhlenbergia filiformis Rydb.

This grass, not so rare as 13,047, but equally inconspicuous.

No. 13,049. Eleocharis macrostachya

a common sedge in the swampy mdw.

No. 13,050. Arabis rectissima Greene. On brushy hillslopes, dry soil.

[No. 13,330. See p. 498. Bromus orcuttianus Vasey (det. Beecher Crampton, NOV. 1928) This grass is common, brushy hillslopes, dry soil. Huckleberry Creek, July 28.].

No. 13,051. Pentstemon azureus Bth Brushy hillslopes, dry soil. I am unable to recall any difference, looking at this flower, between it and the Coast Range form.

No. 13,052. Castilleia

Perennial; with no. 13,050.

No. 13,053. (Discarded, insect damaged) Erigeron

with 13,050. Rays purple.

No. 13,054. Eriogonum umbellatum var. stellatum with 13,050.

Huntington Lake, Fresno Co. 6900 ft.

- Today we went across the lake to the s. side near the middle dam and picnicked. Below the dam I collected the following:

No. 13,055. Eriogonum wrightii
Rocky dry slope.
Colonies.

No. 13,056. Trifolium monanthum Gray var. parvum McKlr. Plants with ascending or flowering stems but forming a leafy mat below.

No. 13,057. Sagina
moist bed of stream course. This caryophyll appears to be rare.

No. 13,058. Equisetum arvense L.
with 13,057.

No. 13,059.
This liverwort grew with 13,057.

No. 13,060. Epilobium angustifolium L.

The lower pair of petals are displaced right and left- so as to leave a gap in the corolla circle on the lower side. The downward curved or deflexed-curved stamens fill this gap; the stamens are strongly proterandrous; eventually the stigmas expand on the long style and stand in the way of any insect visiting the flower. Bees are now working the fls.

- Potentilla uniuiculata Greene I have been examining fls. for pistils. I find 1, 1, 1, 2, 3, 2, 2, 2, 3, 2, 3, 2, 1, (number of) cf. no. 13,044.

Huckleberry Creek, Huntington Lake, July 30, 1928. 7100 ft.

No. 13,061. Carex

Colonies in a swampy meadow.

No. 13,062. Eleocharis

Large colonies, swampy meadow.

No. 13,063. Juncus orthophyllus Cov.? (det. P. Rubtzoff, Jan. 1932)

Swampy mdw.

No. 13,064. Juncus macrandus Cov.

Swampy mdw.

No. 13,065. Carex

Swampy mdw.

This plant forms a sort of hillock, a trifle above the general level of the meadow. The stems are thickly tufted and arise from a thick mass of root-stocks and roots. This mass is not only very thick but very closely woven; so closely woven that when I try to uproot the specimen with my

botanical pick the sensation exactly resembles striking so much rubber! After much effort I get it uprooted and in order to make practicable representation for the collecting sheets I must cut the root-mass by shaving off slices with a sharp knife!

No. 13,066. Potentilla gracilis Dougl. var. hallii Wolf. Moist edge of meadow.

No. 13,067. Trifolium monanthum Gray var. parvum Hall. With 13,066.

No. 13,068. Poa bolanderi Vasey

This grass grew with no. 13,066.

No. 13,069. Trifolium wormskyoldii Lehm. With no. 13,066

No. 13,070. Aster

With 13,066.

No. 13,071. Phacelia grisea phylla (Brand). With 13,066.

Huckleberry Creek, Huntington Lake, Fresno Co., 7100 ft., July 31.

No. 13,072. Fragaria virginiana Duch. var. platypetala Hall. =F. platypetala with 13,066.

No. 13,073. Hieracium albiflorum Hook. With 13,066.

No. 13,074. Osmorrhiza nuda Torr. With 13,067.

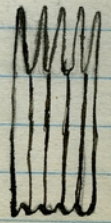
No. 13,075. Oxypolis occidentalis C. & R. → spm. discarded; in-sect-riddled! This umbellifer grew in the swampy meadow.

No. 13,076. Saxifraga integrifolia Hook. With 13,075.
= S. oregana Howell, not integrifolia!

Cascada, Huntington Lake.

No. 13,077. (Chrysothamnus) Haplopappus Bloomeri var. angustatus Gray Rays 1, 2, 3 in one panicle. Rays light yellow, oblong. Disk-fls. 9, 8, 8, 9, 9, 8, 9.

Cont. p. 419.



A. Anther-column spread out (broken off below), showing the tails at apex of the cells.

Line Creek, Huntington Lake. Fresno Co.
July 31, 1928. 7100 ft.

No. 13,078. Arabis rectissima Greene. Open fir forest.

No. 13,079. Epilobium brevistylum Barbey. Seed taken for garden.

No. 13,080. Deschampsia elongata This grass with no. 13,078.

No. 13,081. Pyrola picta Sm. With 13,078.

No. 13,082. Gayophytum diffusum T. & G. Corollas open but once, white, turn pink on closing. With 13,078.

No. 13,083. Epilobium brevistylum Barbey. Little meadow near Line Creek. Seed taken for garden.

No. 13,084. Gentiana amarella L. ~~var. acuta Herder.~~ Corolla very small, pale blue. With 13,083.

No. 13,085. Galium Wet mdw. at Line Creek.

Line Creek, Huntington Lake
412 Fresno Co. 7100 ft.

No. 13.086. Carex
Little mdw. near
Line Creek.

No. 13.087. Danthonia unispicata (Thurb.) Munro
This grass in the
open forest near Line Creek.

No. 13.088. Eleocharis acicularis (L.) R.&S. with 13.086.

No. 13.089. Luzula
with 13.086.

No. 13.090. Carex
with 13.086

No. 13.091. Antennaria margaritacea ♂ Side
hill, Line Creek.

No. 13.092. Antennaria margaritacea ♀. Side hill
Line Creek. One colony of
this species but the ♀ and
♂ segregated in the colony.

No. 13.093. Cirsium
Side hill.

July 31, 1928

413

No. 13.094. Senecio
Stream side.

No. 13.095. Juncus mertensianus Bong.
ssp. gracilis (Engelm.) F. J. Hermann
Sandy streamside.

No. 13.096. Sphenosciadium capitellatum Gray. Stream bank.

No. 13.097. Carex
Moist border of
meadow
wet ↑

No. 13.098. Galium
Corolla clear or
pure white. Wet meadow.

No. 13.099. Pedicularis groenlandica
Retz. 2½ tall stems
form almost a miniature
forest on the meadow by the
Line Creek bridge.

No. 13.100. Tofieldia glutinosa (Michx.)
Pers. ssp. occidentalis (Wats.) C.L. Hitchc. Wet mdw.

No. 13.101. Carex
Moist border
of wet mdw.

Line Creek, Huntington Lake 7100 ft.

No. 13,102. Epilobium brevistylum Barbey. Corollas pink. Wet mdw.

No. 13,103. Mitella Breweri Gray. Moist border of wet mdw.

No. 13,104. Lupinus latifolius Agardh. var. columbianus C.P. Sm. Cor. blue and pale white markings. Wet mdw., very rank growth 3 to 3½ ft. h.

No. 13,105. Oryzopsis Breweri Dry hillslopes, open fir forest.

No. 13,106. Glyceria elata (Nash) Hitchc. This grass grew rankly in the swampy mdw. at Line Creek.

No. 13,107. Veronica americana Schw. With 13,106

No. 13,108. Saxifraga oregana Howell Rootstocks thick

Fresno Co. July 31, 1928.

and long! With 13,106.

No. 13,109. Trisetum projectum Louis-Marie This grass grew in the open pine forest.

No. 13,110. Arabis rectissima Greene. Open pine forest.

No. 13,111. Arabis rectissima Greene These rosettes of Arabis no. 13,110, seem certainly to be two years old. Some of the plants have two rosettes. It is not within my recollection that these rosettes appear in herbaria.

No. 13,112. Phacelia hydrophylloides Torr. Circular colonies in open pine forest, the roots very deep-seated and giving rise to branched and spreading root-crown stems. These stems

must eventually offset through the death of the central root-tuber.

- Today I hiked from Cascada sta., Huntington Lake to Big Creek, and collected the following:

"No. 13,113. Sambucus velutina D. & H. Large bushy clumps 5 to 8 ft. tall. Moist canon, rich soil, near canon bed stream. Both the larger and the small leaflets are so undulate that none will lie flat. 6800 ft

"No. 13,114. Streptanthus tortuosus Kell. I measured the height of the larger plants in a colony that occupied broken ground; they were 4 to 5 feet 5 inches high! But these plants, mark it, grew in broken ground, a land slip

from the upper side of the road grade. On the forest floor above grew, scattered here and there, individuals of the more usual size, 1 to 1½ feet high!! Mountain side above Big Creek, 5500 ft. Open pine forest.

"No. 13,115. Eriogonum roseum Open pine forest.

"No. 13,116. Galium Somewhat like a rough mat, open pine forest. 4500 ft.

"No. 13,117. Streptanthus tortuosus Kell. Open pine forest, mountain slope. 4000 ft.

"No. 13,118. Erigeron foliosus Nutt. Stems very slender, from slender rootstocks going down to slender roots. Open pine forest, mountain slope.

No. 13.119. Melica imperfecta Trin. var. refracta Thurb. This grass grew on the under side of rocks - great boulders and massive blocks that fill the lower part of the foot trail on the way down to Big Creek sta. - Asclepias cordifolia (Torr.). Dry slopes above Big Creek.

No. 13.120. Lessingia

Large colony on an dry grassy slope. Fls. light lavender. Big Creek 3300 ft.

No. 13.121. Gilia pluriflora Hel. =Eriastrum

This gilioid plant formed a small colony 2 feet square on mountain side, open forest, above Big Creek, 4500 ft.

No. 13.122. Cordylanthus

5000 ft. Upper pair of stamens

shorter. Lower (longer) pair of stamens with separate anthers just as in the shorter pair.

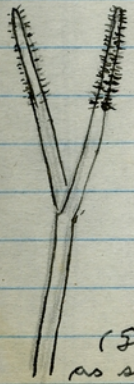
Calyx: upper segment the longer, entire; lower segment entire. Segments distinct!

Corolla greenish-white with purple blotches on the sacs of lower lip: upper lip a little the longer, hooded; lower lip entire. Upper lip mostly purple. Cor. mostly purple on sides below sinus.

Cont. p. 420.

- Rubus parviflorus Big Creek sta.

- Cont. from p. 410, no. 13,077.



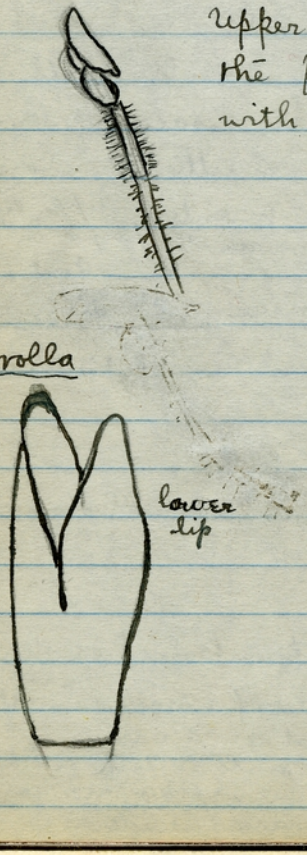
Chrysothamnus

Style-branches hairy on upper half on outside, not on inside.

(The anther teeth or "tails" as shown on p. 410 are really a little more slender.)

Cont. No. 13,122

One of the upper pair of stamens, the filaments hairy with long soft hairs.



The flower clusters have 2 or 3 fls. in a cluster. The bracts are narrowly linear and entire with an occasional broader 3-cleft bract.

This appears to be nearest to C. filosus but differs essentially. Big Creek.

No. 13,123. Hazardia whitneyi
Open pine forest, dry soil. 5000 ft. Big Creek.

No. 13,124. Iris
Big Creek. with 13,123.

No. 13,125. Stachys
Moist rivulet bottom. Cascada, Huntington Lake, 6800 ft.

No. 13,329. Penstemon bridgesii Gray. (cont from p. 498.)
Cor. crimson. Cascada, Huntington Lake. Upper lip cor. cleft at apex, lower lip cleft into 3 equal lobes. Stamens and style and sterile

stamen all glabrous! Fresno Co. Anthers opening only by a cleft at the apex of the cells, the margin not ciliate. Cascada.

No. 13, 126. Descurainia Richardsonii ssp. incisa

Bushy-Branched,

3 ft h. Cascada,

No. 13, 127. Carex

Heavily tufted,

very heavy tuft! Cascada.

— This evening we went to see the Barber of Seville in the Forest Theatre at the Sierra Summer School. After our party were seated I decided we needed the comforters left in the car and went back to the car. As the road I heard a plaintive cry for help: "Won't you please fix the donkey". I

looked. There was a young girl pulling vainly on a stubborn donkey. I went across. "He is the mule in the play" said this helpless girl of eighteen "and he won't come"! She did not know which end of the bridle went on his head, so I bridled the beast, ran the lead rope through the bridle-bit-gear, after which the donkey went quietly along. The play went off very smoothly, was well acted by these amateurs, and much enjoyed by a large audience. The great pine trees, the full moon and Sierran mountain shadows heightened the glamour of the scene.

No. 13,128. Mimulus

Herbage dewy-sticky. Wet border of mdw.

No. 13,129. Sidalcea

Swampy mdw.

No. 13,130. Rumex

Swamp mdw., colonies.

No. 13,131.

This fern grew by the rivulet side, Huckleberry Creek.

No. 13,132. Parnassia

With 13,131

No. 13,133. Pyrola

Foot of fir tree in heavy forest duff.

– One Sunday we went to boat races on the lake. In the party were Mr. and Mrs. Steinwand, of Fresno, relatives of Mrs. Kelley (See p. 376 at bottom).

– The walk down to Huntington Creek (see p. 416 ante) was primarily for the purpose of securing a permit to go over the road to Florence Lake with my auto. When I entered the office of the Southern California Edison Company it was at once evident that I was to be up against a mere over-the-counter clerk, who had a line of talk in the way of refusal well memorized. That my object was a scientific expedition did not get beneath his skin at all. So I went back to Huntington Lake. Thereupon Mrs. Peter Snyder (see p. 376) telephoned the District Ranger F. M. Swasley at Big Creek. After some conversation Swasley said: Who did you say

wanted this pass? My friend said. Mr. Jepson. You don't mean Jepson's Trees of California inquired Swarley. Yes, said Huntington Lake. Oh, Well, said Swarley, Jepson's Trees of California can go anywhere he wants to. Sure, we'll pass him to Florence Lake. Then my friend explained that the Edison Company had refused a permit. Oh, never mind about that, said the cheerful Swarley, there aint no Southern California Edison Company going to stop Jepson's Trees of California. We will see to that.

Swarley was described to me as rough, uncouth, crude of speech. But apparently he knows how to

handle his fire-gaurds and rangers and knows how to manage the general public. Some one called him a rough-neck. In the slang of the day he may be in that category - but if so I would call him an Honorable rough-neck.

No. 13, 134. Rosa
Colony, above Huntington Lake towards Badger Flats. 3-4 ft. Ph. Mountain slope.

No. 13, 135. Senecio clarkianus Gray. Cont. p. 439. With 13, 134.

No. 13. 136. Angelica
With 13, 134.

No. 13, 137. Solidago
Above Badger Flats on road to Kaiser Pass.

No. 13, 138. Ribes cereum
With 13, 137.

Huntington Lake to meadow on n. side Kaiser Pass = Kaiser M. We (Mrs. Snyder, Elsie Kelley and I start for Florence Lake.

I have seen no Chamaebatia foliolosa anywhere in this region, between Auberry and Shaver Lake,* see p. 429. between Big Creek and Huntington Lake. Above Huntington Lake I do not find any either, tho' the latter area is too high. I do not notice that its is replaced by any other species ecologically speaking — any species that may be said to occupy just its niche.

Above Huntington Lake the opens in the fir and pine forest have a low ground cover of Chrysothamnus no. 13,077 (6 to 12 in. high bushes) forming almost pure colonies which are quite

Aug. 5, 1928

extensive.

The forest belt of these mountains seem very different from the forest belt of the Sierras further northward. The forest species are of course the same but the character of the associated ground cover is so different. It is woody thin, and there is much open or naked sandy-granite slope. It reminds one more of the desert ranges.

Just above Huntington Lake I notice a tilted sand meadow filled with Eriogonum (same as no. 12,999) and with Astragalus Bolanderi (Gray) (same as no. 12,996). These two species seem to be always associated — in this region at least.

* p. 428. This species occurs along Pine Ridge as indicated on p. 484 seq. (Chamaebatia foliolosa).

430

No. 13,139. Mimulus Lewisii
By rivulet, below Kaiser Pass. 800 ft., about. Aug. 5.

No. 13,140. &
Kaiser Meadow just n. of Kaiser Pass. in dry sandy soil.

No. 13,141. Streptanthus
with 13,140

No. 13,142. Streptanthus
Kaiser Meadow edge, meadow just north of Kaiser Pass.

No. 13,143.
This grass grew with 13,142. Carex
with 13,141.

No. 13,143. Streptanthus
with 13,142.

No. 13,144. Arabis platysperma
with 13,140.

No. 13,145. Antennaria
Sandy open forest floor edge of mdw. n. of Kaiser Pass.

(see bottom p. 442).

431

We camp over night by the meadows* edge just north of Kaiser Pass and about 1/3 mile from the pass. It is a great delight to be in the open in the Sierra forest again: perfectly calm serene days and nights running by one after another; scarcely a breath of stirring air the whole night long; the stars shining with unfamiliar brilliance; the cloudless sunny days, fair and restful.

This morning all the cattle in the meadow were faced in one direction, looking intently in one direction, and I saw a coyote moving slowly towards the calves to get one by the throat or better still to hamstring its hindlegs. Then a big steer starts from the group and gallops directly towards the coyote, followed by the herd. The coyote turns and runs to the cover

* Kaiser Mdw. acc. F. M. Sweesley in litt. 1932.

of the forest. The herd go on grazing but watch him in his course. Then after about an hour he makes off across the meadow, evidently disposed to try his luck at a kill elsewhere.

No. 13,146. Flies grass grew with 13,142. Kaiser Mdw.

No. 13,147. Gayophytum

Note its red herbage, especially the red stems

Kaiser Mdw. With 13,142.

No. 13,148. Senecio

Kaiser Mdw. Dry sandy soil, meadow edge, n. of Kaiser Pass.

No. 13,149. Gentiana newberryi

Corolla nearly white; lobes apiculate; sinus appendages with 2 slender teeth, i.e.

terminating in 2 slender teeth, sometimes only 1. Corolla lobes green-dotted, each lobe with 2 pair of double rows of dots running down tube, that is 4 rows, but the rows in 2 pairs.

Moist meadow, just n. of Kaiser Pass. = Kaiser Mdw. (cf. Frank M. Swezey in litt. Mar. 19, 1932.).

No. 13,150. Castilleia culbertsonii Greene. Kaiser Mdw. just n. of Kaiser Pass. Spikes, especially the bracts, deep but vivid red, very different from any other of our species of Castilleia.

No. 13,151. Aster andersonii

Abundant in mdw. with no. 13,150. See p. 471.

No. 13,152. Potentilla santolinoides

About 3 mi. ne. from Kaiser Pass.

No. 13,153. Eriogonum

with 13,152.

No. 13,154. Arctostaphylos
Low rough mat,
but as depressed-spreading scarcely not as A. nevadensis. with no. 13,152.
No. 13,155. Gnaphalium
Sandy flat,
about 10 mi. n. of Lake Florence.
No. 13,156. Mimulus
with 13,155. The corollas stain the sheets red a little. I do not recall any other M. species that does.
Mimulus (no. 13,156).
Diffusely branched; corollas crimson with red-purple throat, a red-purple line running from throat out into center of lobes. Throat with 2 yellow folds on lower side. Corolla lobes same size and shape, rounded-truncatish, the upper lobes curved

back a little more than the lobes of lower lip.
No. 13,157. Potamogeton
In a lily pond about 5 mi. n. of Lake Florence.
No. 13,158.
Margin of lily pond about 5 mi. n. of Lake Florence.
No. 13,159.
This grass grew with 13,158.
No. 13,160. Dulichium arundinaceum Britt. Peaty border of pond. with 13,158.
No. 13,161. ~~Lotus americanus~~ nuphar polysepalum Engelm
Near lily pond, about 5 mi. n. of Lake Florence.
Dry sandy soil.
No. 13,162. Polygonum
with 13,161.
No. 13,163. Potamogeton
with 13,157.

— within about 8 mi. of Florence Lake I pass Quercus Kelloggii on the hillslope; this seems a strange station for it — very far in, and quite high. Small trees.

No. 13,164.

This grass grew in good soil at Florence Lake.

No. 13,165. Gnaphalium

Abundant on good soil in the old village at the dams and probably introduced. Half again as high. Bushy branched from base, erect.

No. 13,166. Potentilla

Petals pale-cream-white. with 13,165 and prob. introduced.

No. 13,167. Chrysothamnus

Bushy. branched from base, forming globose plants. The silvery foliage and golden flowers form spots of beauty on the gray granite.

No. 13,168. Erigeron

Good soil in clefts of the granite. Perennial.

No. 13,169. Eriogonum

Granite seams.

No. 13,170.

With 13,165, very likely introduced.

No. 13,171. Erigeron

With 13,165

No. 13,172. Mimulus

Cor. yellow. With 13,165. Cont. p. 439.

No. 13,173. Heracium

Seams of the granite rocks.

Florence Lake, Fresno Co.
7300 ft.

– Florence Lake. When the dam was under construction there was a considerable village at the dam site. Horses were used as well as motor trucks. On the former village site I note weeds that came in with the hay and other supplies: Rumex pulcher; Sonchus asper; Anthemis cotula; Chenopodium album; Amaranthus albus; Brassica campestris. There are, in addition, native plants which appear to have moved in at the same time: Nos. 13,165; 13,166; 13,170; Achillea millefolium.

It would be interesting to observe whether these plants persist as the area reverts to a natural or primitive condition.

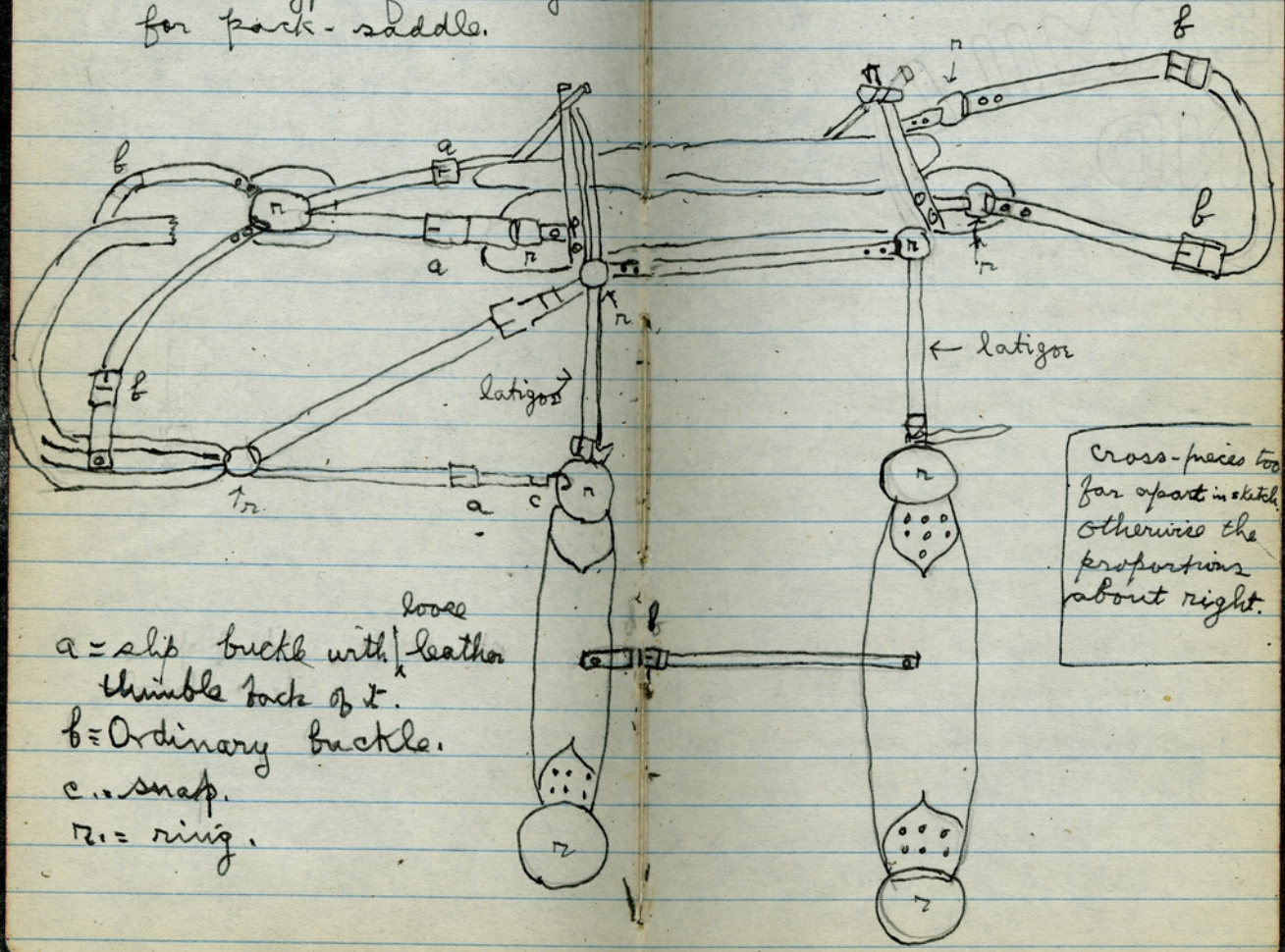
– Cont. no. 13,135. This is a fine endemic of the southern Sierra Nevada and was named for Galen Clark by Asa Gray. Clark took an interest in the native species and was much beloved by the mountaineers. Senecio clarkianus is a fine tall and striking Senecio with marked foliage, which grows on open slopes of the mountains in the fine-fir belt.

– Cont. no. 13,172. Corolla-lobes of the same size and shape, about; the 3 lower lobes disposed in trefoil fashion, the upper lobes with their contiguous edges a little higher. Folds in throat yellow, purple dots between and either side and of folds on palate. Herbage glandular-puberulent, reddish-brown.

Florence Lake, Fresno Co.

Aug. 7, 1928.

Excellent type of harness gear for pack-saddle.



a = slip buckle with loose leather thimble back of it.

b = Ordinary buckle.

c = snap.

r = ring.

Cross-pieces too far apart in sketch. Otherwise the proportions about right.

Florence Lake, Fresno Co.
7300 ft.

– At scattered stations between Huntington Lake and Florence Lake I notice Pentstemon Bridgesii. On the rocky granite slopes running down to the South Fork San Joaquin it hangs its clusters or racemes of scarlet flowers over the glaring white granite the most brilliant bits of color now in evidence. The plants grow in seams of the granite. It was named for Thos. Bridges. The field of his collecting in California has never been known; but, in the Sierra Nevada it was probably in the Yosemite region, since he collected this species.

– This trip was in company with Mrs. Peter Snyder (Harriet P. Kelley) and Elsie Kelley. See p. 444.

No. 13,174.

This grass grew in good soil pockets on rocky mountain slopes.

No. 13,175. Juncus

This rush occurs in very heavy stools in good soil pockets on rocky mountain slopes. The sheet represents about ¼ of the stool.

No. 13,176. Carex

With 13,174.

No. 13,177. Lotus

Stems trailing over ground from a central root-crown forming plants 2 to 5 ft. across. Sandy soil.

No. 13,178. Carex

With 13,176.

– Cont. from p. 495. Four-mile Slough is between Lone Willows Road sta. and Whites Bridge. See Jepson Correspondence, vol. 23, p. 217.

Lake Florence, Fresno Co. 7300 ft.

- Arctostaphylos patula Greene, abundant.
- Ceanothus cordulatus Kell. Very frequently with Arctostaphylos patula.
- Chrysothamnus (same as No. 13,077). Common, but more so around the lily pond and near camp 62. see p. 447 at bottom
- Camped near us at the Florence Lake dam are a couple of men remarkable for their contrasting temperaments. One has a resonant voice that carries easily about 1/4 mile, his manner bold and raucous, his language intensively interlarded with profane words; the other man* is quiet and non-profane. The first man is named Ely, an old-time

* Bamford Thornton ↑ Willis

cattleman of these mountains; he lives at ↑Shaver, Fresno Co. He says that, 40 years ago, when he was first in Tuolumne Meadows. he saw a strange man on a donkey coming across the meadows, an old fellow with cotton-white hair and long white beard. He was waving a long stick with a whitish net-like thing streaming out from the end. In the name of hell, shouted Ely to his companion, is that the devil or avenging Time come to slaughter. See him wave his besom of destruction! Wait a bit, replied his companion. He's all right. That chap is collecting butterflies and insects. At other times he collects plants. His name is Lambert."

446

Ely told another story of turkey-raising on the San Joaquin near Millerton. A chap being hard up wanted to make some money had raised the turkeys and lost 2500 at one time. – See p. 470.

– Dunford Thornton, one of the two cattlemen referred to on p. 444, says that he has a meadow in the mountains above us west, that poisons sheep each time he takes a flock through it. He wants me to take a look at it – and after returning from the Vermilion Valley trip (see p. 450) I go up with Tim. Thornton has a string of pack mules – excellent animals – and we move rapidly up the very steep mountains. The openly forested country is quite fresh – no flocks or herds having

See p. 462,

447

been in it this year. The mountain side is openly forested with Red Fir and Silver Pine (Pinus monticola) with a good deal of Ribes nevadense below, some Ribes (no. 13,278) and Castanopsis sempervirens (common). Ribes nevadense (no. 13,277) is avoided by sheep as a browse; but they take to Ribes (no. 13,278). Thornton calls Castanopsis sempervirens by the name Bur Oak. He does not recognize its "chestnut" character. Sheep do not browse it.

One of the striking plants in this mountain side forest is Swertia radiata Kfgle., (no. 13,229), six feet high with the single tall unbranched stem arising from a striking rosette of large leaves. This species must be on [cont. p. 480].

Lower Hot Springs, South Fork San Joaquin River

448 (See p. 449 seq.) = Mono Hot Springs. 6500 ft.

No. 13,179. Eleocharis rostellata Torr. This sedge fills the hillside (sloping) bogs about the springs just above the river Trd. It makes extensive pure stands in the bogs, the growth of it being very thick, so that it is difficult to get a specimen loose from the mass. The bog is very soft and watery, one sinks in it very readily.

No. 13,180. Senecio hydrophilus Nutt. Discarded Insect damaged Oct. 1965 Luxuriant perfectly glabrous glaucous plants 3 to 5 feet high in the bog described under no. 13,179. Four sheets taken, 2 of foliage from the lower part of the plant, 2 of the panicle the most including quite all of it;

Aug. 8, 1928 Fresno Co.

only a small part of the foliage taken. Rays 3. Herbage quite glaucous!!

449

No. 13,181. Senecio hydrophilus Nutt. Same species as 13,180, but another plant, the entire individual taken.

No. 13,182. Aster With 13,179.

No. 13,183. Triglochin maritima L. 3 to 4 ft. h., in the bog.

No. 13,184. Muhlenbergia asperifolia (Nees & Mey.) Parodi This grass grew in the bog

No. 13,185. Potentilla gracilis Dougl. var. pictinisecta Jepson. In bog.

- On the U. S. Forest Service map of the Sierra Forest (1925) this place is named "Mono Hot Springs". See F. M. Smiley in litt. Mar. 19, 1932.

(= Mono Hot Spgs.)

We start early (6.m.) this morning (Mrs. Snyder and Hess and myself) for Vermilion Valley. Passing through a small meadow within 100 yards of the camp on the river (South Fork San Joaquin). we climb over a peculiarly broken country filled with massive angular blocks of granite. It is like a half-hundred Yosemites in miniature, the "cliffs" 15 to 40 feet, the "valleys" represented by tiny meadows or sometimes by little lakes that have no outlets. Through such country (see list p. 270) we come to a large meadow, set off by cattle bars at each end for the use of "tourists". It is here, provisionally, called Tourist Meadow*. I collect near this place the following:

* = Mono Ranger Mdw.

No. 13,186. Lotus crassifolius Greene. Protected by brush, 3 to 4 feet h., rocky mt. slope.

No. 13,187. Zauschneria californica Presl. Seam of a great granite block. Mono Ranger Mdw.

No. 13,188. Artemisia tridentata Nutt. ssp tridentata Very common between Vermilion Valley and "Tourist Mdw." (see p. 450) (= Mono Ranger Mdw.)

No. 13,189. Potentilla (= Ivesia) unguiculata Greene. 7700 ft. Vermilion Valley.

No. 13,190. Haplopappus aparioides Gray det. Otto T. Solbrig (1960) 7700 ft. This composite has ascending or erect stems from a basal cluster which crowns a very heavy, very thick root. (vertical) It is common all over the sandy floor of Vermilion Valley but quite secondary in number of individuals to the dominant species of the floor, the "short-hair" sedge (no. 13,194). See p. 453.

No. 13,191. Gentiana newberryi Gray. Moist mdw. in Vermilion Valley.

No. 13,192. Potentilla gracilis ssp. Nuttallii (Lehm.) Keck with 13,191.

No. 13,193. Agoseris cf glauca var. monticola This cichoriad grows on the dry sandy floor of Vermilion Valley. It is associated with 13,190; seemed to be very scarce.

No. 13,194. Carex

This Short-hair Sedge is the dominant species on the sandy floor of Vermilion Valley. Everywhere it makes a ground-cover which, though not strictly continuous, spreads like a broad sheet over the valley. In some places it is very dense, in others there are little sandy

spots between the colonies or clumps. Occasionally there are sandy stretches destitute of all herbaceous vegetation. Occasionally this species forms:

Fairy Rings

Growing in circles which are the result of vegetative spread from a single central individual, in time the oldest central plants die out leaving a true fairy circle. These circles are sometimes large, 8 to 10 ft. in diam., sometimes small 2 to 3 ft. diam. The question arises as to whether they may not be the result of accidental circumstances; but they seem to be too many and too regular to be so explained. This formation is essentially pure except for one species, namely no. 13,190 (Haplopappus aparioides Gray)

Vermilion Valley, Aug. 10, 1928
Fresno Co. 7700 ft.

The proportion of individuals of the Carex to the Composite is roughly about 25 or 100 to 1.

No. 13.195 Muhlenbergia richardsonis (det. Beecher Crampton, Nov. '75) (Trin.) Rydb.
This grass grew on the sandy floor amongst the Tamrac Pines

No. 13.196 Eriogonum spergulinum var. spergurlinum
With 13,195

No. 13.197. Juncus
Half-moist sandy flats.

— Vermilion Valley is a flat sandy level, a great deal of Pinus murrayana, a lot of Populus tremuloides,* but with extensive opens covered with a formation of Short-Hair Sedge (no. 13,194), see p. 452. Towards the head of the valley, the wall structure is more and more reminiscent of Yosemite with a dome structure showing here and there.

* Some Pinus Jeffreyi.

Quail. Aug. 10, 1928, Mono Creek,
Mdw Fresno Co. 7900 ft.

No. 13.198. Potentilla gracilis Dougl. ssp. Nuttallii (Lehm.) Keck ~~hallii Wolf.~~ Moist meadow, aspen grove.

No. 13.199. Achillea Millefolium L. var. lanulosa With 13,198.

No. 13.200. Polygonum
Common throughout the region in sandy soil.

No. 13.201. Potentilla gracilis ssp. Nuttallii (Lehm.) Keck Petals yellow, truncatish at apex. Hypanthium pale or almost whitish. With 13,198.

No. 13.202. Senecio scorzonella Greene
Rays 3, 2, 2, 3, 1, 1, 2.
Note the small but conspicuous black tips to the involucral bracts. With 13,198.

No. 13.203. Juncus ensifolius Wikstr.
With 13,198

No. 13.204. Deschampsia elongata
This grass grew in moist soil in the aspen grove.

No. 13.205. Aster
With 13,198

No. 13.206. Trisetum projectum Louis-Marie
This grass grew in moist soil in the aspen grove.

No. 13.207. Luzula
With 13.206.

No. 13.208. Carex
With 13.207.

No. 13.209. Ribes montigenum McClat.
Stems ascending and widely spreading horizontally. Berries pink-yellow, just a little suggestion of dark salmon-color, a little broader than wide and somewhat depressed. With 13.206. 2 to 3 ft. h. bushes.

No. 13.210. Collomia linearis Nutt.
Sandy soil.

No. 13.211. Leptanthus harknessii
Sandy soil.

No. 13.212. Gayophytum
With 13.206.

No. 13.213. Eulophus

This umbellifer which is the meadows everywhere through the region, as far west, at least, as Huntington Lake.

No. 13.214. Osmorrhiza nuda Torr.
With 13.206.

No. 13.215. Agrostis cf. glauca
This cichoriad grows in dry sandy flats and is quite past flower. Compare it with 13.193.

No. 13.216. Pentstemon orevcharis Greene.
Moist sandy flat.

No. 13.217. Brodiaea
This grows in a moist sandy flat, at near 8000 ft. It appears to be B. coronaria without any doubt and, in consequence, the station is a very surprising one. I noticed it only in one small area. The second spot where it is noticed I observe perhaps 20 or 30 plants.

Near Quail Mdw., Mono Creek, circa 7900 ft., Fresno Co.

No. 13.218. Cordylanthus tenuis Gray. dry sandy soil on a rocky traverse in the cañon of Mono Creek, circa 7900 ft. The bracts are all narrowly linear and entire. The corolla is whitish with purple blotches; the lips are equal! It seems identical specifically, at least very close to, no. 13,122.

– Quail Meadow. I have this name from Uncle Jack Harkins who said it is a fenced mdw. at head of Vermilion Valley. I found no fenced mdw. at head of the valley flow. At head of valley we climbed on the rocky faces of the cañon walls for perhaps one and one-half miles, dropping into an aspen grove with a flowery mdw. about it – a small place but

unspoiled, unused, where we could ride right down to the edge of the rushing waters of Mono Creek. In lieu of any better name for the locality I am using "Quail Meadow" since the station must be in the neighborhood of Quail Mdw. I flushed a covey of quail not a great distance from the meadow where we lunched, grazed the horses and collected nos. 13,198 to 13,217.

No. 13.219. Ribes roezlii Regel. Berries pink. Near Quail Mdw. Rocky faces of the cañon walls.

No. 13.220. Lipanthus leptodactylus nuttallii Rydb. This gilioid plant is common on the sandy flats beneath Pinus jeffreyi, southwestern part of Vermilion Valley. 7800 ft. = ~~Siphonella nuttallii~~ Hel.

Tourist Mdw., Mono Creek, Fresno Co.
c. 6900 ft. = Mono Ranger Mdw. cf. p. 450 ante.

No. 13,221. Rosa woodsii var. ultramontana ~~gratissima~~ Greene. See Fl. Cal. det. below. This rose occurs in little thickets and is scattered (see p. 270) from the Lower Hot Springs to Tourist Valley (see p. 450). When the plants become older, the young erect canes form a trunk 1 to 2 or 2½ ft. h. which is unbranched for that distance and bears a branched "crown" above. This rose takes on, in maturity, more of the aspect of a little tree than is usually the case amongst our California roses. The trunks vary in color with age: yellowish, reddish, brown or slightly gray. Mostly in good soil at the base of little cliffs. {R. woodsii Lindl. var. ultramontana Jepson.

No. 13,222. Eriogonum roseum Sandy flat.

No. 13,223. Haplopappus racemosus subsp. glomeratus (Nutt.) Hall

Aug. 10. 1928.

This composite grew on the edge of one of the boggy mdws. which is full of mineral springs.

Lower Hot Springs (Fresno Co.) {South Fork San Joaquin River. 6500 ft.
= Mono Hot Spro.

Aug. 11. 1928

No. 13,224. Asclepias speciosa Torr. Dry flats

No. 13,225. Oenothera hookeri T. & G. Plants mostly 2 to 3½ ft. h. Moist flats. Fls. opening at sundown.

No. 13,226. Lolus minutiflorus (Ottley). = L. purshianus var. glaber Dry flats.

No. 13,227. Gayophytum ramosissimum T. & G. Moist flat; flowers heliotropic.

On the mountain side above this place, perhaps within three miles of Camp 62, on the road to Kaiser Pass I saw plants of this species 3½ ft. h

Beuch Meadow, Kaiser Ridge.
Trip to. See p. 446-7.

No. 13.228. Trifolium monanthum Gray var. ~~Eastwoodianum~~ Martin Parish. Moist mountain side above (west) of Camp 62, 8200 ft. on trail to Beuch Mdw.

No. 13.229. ~~Swertia radiata~~ Frasera speciosa Dougl. Ktze. 8300 ft. Leaves entirely in a large conspicuous basal tuft. Beuch on mountain side westerly from Camp 62 on trail to Beuch Mdw. Cont. p. 479. See also p. 447.

No. 13.230. Trisetum projectum Louis-Marie
This grass grew in the mdw. at Beuch Mdw.

No. 13.231. Hordeum brachyantherum Nevskii [Det. Beecher Crampton, Jan. 1973]
This grass grew in the meadows edge at Beuch Mdw.

No. 13.232. Aster
Beuch Mdw.

No. 13.233. Arnica Chamissonis Less ssp. foliosa (Nutt) Maguire. Det. R. Bacigalupi Feb. 2, 1965
Beuch Mdw.

No. 13.234. Carex
Beuch Mdw.

8500 ft. Aug. 12. 1928. Fresno Co.

No. 13,235. Lupinus albicaulis Dougl.
Common on the mountain sides in the open conifer country: Pinus monticola; Pinus murryana; Abies magnifica. The plants are evidently suffering from the unusual drought which prevails this year and have fruited scarcely at all.* When dry, the herbage is good sheep feed and is cleaned up by sheep. This species makes the dominant ground plant beneath the conifers in considerable areas. The specimens were collected near Death Pond.

* cf. vol. 49, p. 44.

No. 13.236. Haplopappus suffruticosus (Nutt.) Gray Det. Otto T. Solbrig.
This composite forms a very low bush, the stems very woody below. Plants 6 to 10 in. high. Rays 3, 2, 1. Rocky drifts. Death Pond.

Death Pond, Kaiser Ridge, at 9000 ft, westerly from Camp 62. Aug. 12. 1928. Fresno Co.

— We passed some clumps of Thalictrum (Meadow Rue) in the forest. A. Thornton, the sheep man, says sheep will not touch the herbage of this plant.

No. 13,237. Eriogonum nudum var. deductum Dwarf forms of Eriogonum nudum; collected near Death Pond; dry open pine forest. and fir

No. 13,238. Solidago Dry open pine and fir forest.

No. 13,239. Calamagrostis breweri (Det. Beecher Crampton 3/32) This grass grew in the meadow at Death Pond.

No. 13,240. Kalmia polifolia var. microphylla Rehd. Meadow at Death Pond. This plant is undoubtedly responsible for the trouble with

sheep when brought into this part of the mountains. Thornton, who leases this range, says he has never failed to have trouble each time. In general the sheep do not die, but become sick, groan and belch and cough all night long. There are some bushes of Ledum glandulosum in the meadow near the pond margin but the sheep could easily avoid this plant. The Kalmia, on the contrary, grows short, very close to the ground and is masked by grasses and sedges of the short-hair type, of which the sheep are fond. It is scarcely possible for them to feed off this grass and not get some of the Kalmia, perhaps a good deal.

No. 13.241. ~~Juncus~~ Scirpus Clementis Jones
Apparently one achene on each stem. Achene minute, gray, flat on one face, convex on the other. Death Pond meadow. Part of the "Short Hair" things

No. 13.242. Oryzopsis Kingii Beal
This grass forms part of the grass-hair things at Death Pond Mdw. See 12,241.

No. 13.243. Bromus suksdorfii
This grass grows at Death Pond, on a bank.

No. 13.244. Castilleia culbertsonii Greene. Meadow at Death Pond. Note the tuft of sterile foliage shoots at base of flowering stem. These shoots are trailing or ascending.

No. 13.245. Ledum glandulosum Death Pond mdw.

No. 13.246. Carex
Very heavy tufts at Death Pond Mdw. Forms thick tough sod.

No. 13.247. Juncus
Forms thick tough sod. Mdw. at Death Pond.

No. 13.248. Carex
Mdw. at Death Pond.

No. 13.249. Aster Andersonii Gray
Mdw. at Death Pond.

No. 13.250. Sparganium aff. angustifolium Mahx. Plants in about 12 to 18 inches of water, margin of Death Pond. Cont. p. 471.

No. 13.251. Phleum alpinum L.
(det. Beecher Crampton, Jan. 1973)
This grass grows at Death Pond mdw.

No. 13.252. Carex
Death Pond mdw.

No. 13.253. Muhlenbergia filiformis Rydb.
One of the "short-hair" grasses at Death Pond meadow.

468

No. 13,254. Gentiana newberryi Gray. Mdw. at Death Pond.

No. 13,255. Symphoricarpos

Plants low or trailing, inclined to form a rough but very loose or open mat. The sterile shoots trail along the ground, take root, and thus make a stringer on the ground which, severed at both ends, catches the feet of the man walking, whence Trip Vine or Trip Bush of the mountaineers. Open dry pine forest, rocky slopes. 8700 ft.

No. 13,256. Symphoricarpos

8700 ft. Sterile shoots of no. 12,255.

No. 13,257. Allotropa virgata Gray.

8700 ft. This years flowering shoot has two other shoots at base below ground; one of this

9000 ft. Aug. 12, 1928.

469

is evidently the stub of last years flowering shoot; the other is a new or young shoot, evidently in preparation for next years shoot.

Fir forest.

[No. 13,332. Sisymbrium incisum Near Bench Mdw. See p. 499. This cruciferous grows on the forest floor, open forest.]

[Cont. no. 13,333. Cucurbita palmata Wats. Pedicels of fruit with ten longitudinal ridges Friant.

"Man don't want no wife, family, horse or friends running a band of sheep" – D. Thornton. His remarks was apropos of happy old days when he had a wife, a good closet full of preserves and fruit and similar enjoyments. Then his wife died, the great store of preserves disappeared and he

found himself with a closet full of empty jars. He thought he would get the lot filled up, but shucks! with a band of sheep he found no time for anything but the sheep! Wherefore the above remark.

— Heracleum lanatum Michx.

On mountain side above Camp 62:

— "Con Taylor and his partner used to make a stake raising turkeys. One year they had 2500 and herded them about the country just as sheep are herded. In order to put the final fattening on them for market they took the herd up on Table Mountain bordering the north side of the foothills. The turkeys were fattened on black crickets very abundant on

↑San Joaquin River

that table land. But one day the whole flock stampeded over the rim of Table Mountain and went to their death on the rocks and down the cliffs. Not one was saved. The neighboring tribe of Indians had a great feast for about ten days! since at once they began to gather up the dead turkeys!" — Willis Ely. All this happened about 1880 when turkeys were worth $5.00 apiece.

— Cont. no. 13,151. The narrow very pointed leaves are, in the field, remarkable for spreading stellately.

— Cont. no. 13,250. Note the long slender rootstocks which run over the bottom of the pond and at intervals of 12 to 18 inches send up an aerial shoot.

Bench Mdw., Kaiser Ridge

472

No. 13,258. Pentstemon oreocharis Greene. Meadow floor, Bench Mdw., almost pure formation of about 25 acres.

No. 13.259. Polygonum gregarium, its reddish color marking its colonies on the meadow floor.

No. 13,260. Dodecatheon Mdw.

No. 13.261. Potentilla glandulosa Lindl. var. nevadensis Wats. Sandy borders of mdw.

No. 13,262. Scirpus Moist mdw.

No. 13.263. Thalictrum Moist mdw.

No. 13,264. Erigeron coulteri Porter Moist mdw.

No. 13.265. Carex Moist mdw.

No. 13.266. Juncus orthophyllus Cov.? (det. P. Rubtzoff, Jan. 1972) Moist mdw.

8500 ft. Aug. 12, 1928. Fresno Co.

473

No. 13.267. Juncus mertensianus Bong. ssp. gracilis (Engelm.) Hermann Moist mdw.

No. 13.268. Aster Moist mdw.

No. 13,268a " "

No. 13.269. Potentilla gracilis Dougl. var. rigida Wats. Borders of mdw.

No. 13.270. Carex Borders of mdw.

No. 13.271. Epilobium angustifolium L. Apparently only a dwarf form of the large-sized E. angustifolium. The foliage mystified me at first. On the borders of the mdw. in rather dry soil I found a large colony only in leaf. Later a few plants are found with flowers. Ground rather dry.

No. 13.272. Epilobium angustifolium L. A somewhat larger form, intermediate between 13.271 and the usual large form. Dry borders of mdw.

Bench Mdw., Kaiser Ridge

No. 13.273. Rumex
Too young; Discarded, Mpv. Colony in somewhat dry soil, borders of wet mdw. 83. J.C. Hickman

No. 13.274. Sitanion hystrix

This grass is one of the earliest pioneers on the granite sand. Newly formed or deposited granite sand is an unfit coarse substratum for most seed plants. Eventually a few species pioneer and gain a foothold. One of these is this grass; another one is Arabis platysperma.

No. 13.275. Sphenosciadium capitellatum Gray.

Sheep eat it! says Dunford Thornton. Moist mountain side.

No. 13.276. Agoseris grandiflora.

With 13,275.

No. 13,277. Ribes nevadense Kell. Berries black with a bloom. Sheep do not eat it! Mountain side.

8500 ft Aug. 12. 1928 Fresno Co.

There used to be a Dutchman who owned the Wide-a-Awake Ranch, an old-time ranch which joins the Adobe Ranch northwest of Friant. He was a skilful card player and won a good deal of money gambling. He did Charley Lindsay out of $8 00 and an Irishman out of $500. Charley Lindsay lived on the San Joaquin River and raised hogs. He drove about 2000 hogs to Stockton along the old Fort Miller road. He and the Irishman were "put out" by losing so much money to the Dutchman and the Irishman said to Lindsay: "Don't we put up a bet on him?" Lindsay agreed and they decided to have the Dutchman into a bet. The drive of hogs

476

Stockton Began. A supply and camp wagon drawn by four horses went along with the drovers. When short of the Wide-Awake-Ranch (where the night feeding stop was to be) about a mile, Lindsay let the Dutchman out of the wagon where there was a sign-post. Now, said Lindsay, you lay low until I get to the ranch; then you show yourself as a tramp with your blanket roll across the road from the sign-post. When I take off my hat in waving fashion thus, you go over to the sign-post and climb it.

Lindsay then went on to the Wide-a-Awake Ranch and [illegible] to chaffering with the Dutchman.

477

Finally he called attention to the tramp trying to read the sign-post. The big fool, said Lindsay, I bet you $500 to he goes over and climbs the post to read the sign. Done, said the Dutchman, who felt he had a sure thing on so absurd a proposition. Lindsay sealed the compact by taking off his hat and waving it to the ground in derisive fashion. Almost immediately the tramp walked over to the sign-post and began to climb it. Lindsay won the $500. The Dutchman never suspected the job put up on him, nor did he find out afterwards, though the story was told and retold and became a legend of the neighborhood. We must remember that in one sense the trick was an

Bench Mdw., Kaiser Ridge Fresno Co.

lazy one. In that day men would bet on anything and in the freest manner. — This story from Willis Ely.

No. 13.278. Ribes cereum Dougl.
Berry crimson.
Sheep browse it! Moist mountain side. 8300 ft.

No. 13,279. Aster
8300 ft. Moist mountain side.
— This camp by the meadow with the two stockmen Thornton and Ely (see p. 444) makes a highly interesting experience. Both depart themselves just as if I were not present. (Cont. p. 286) and
— Ceanothus cordulatus Kell. Foliage makes good sheep browse says Dunford Thornton, but, although it is fattening, the thorns make it hard to get at.
— Cont. no. 12,951. — The clusters of flowers are so close that they are properly designated

8500 ft. Aug. 12, 1928.

"heads", but each flower has as seen under the microscope a very short pedicel and each pedicel has a small lanceolate bract, decreasing in size as one goes up and into the cluster. Plants perennial!, the trailing stems from a heavy tap-root, deep seated evidently, in the crown of hard gravelly ground.
— Cont. no. 13,301. Petals 5, ovate, very obtuse or truncatish, pale yellow. Stamens 10. Ovary strongly 5-ridged; no style; stigmas 5.
— Cont. no. 13,229. Plants 4 to 6 ft. h. Only about 1/3 of wifl. taken.

— Calyptridium umbellatum.
The sheep are fond of this, says Dunford Thornton.

— Both Thornton and Ely have excellent pack animals. For this rough work in the mountains animals must receive good treatment. Thornton's animals go lightly loaded and in Ely's string is an extra —
— Cont. p. 359 ante

"Camp 62," above Lower Hot Springs
Aug. 12, 1928 - Fresno Co.

480

No. 13.280. Aster integrifolius Nutt. Rays lavender-purple. Stems decumbent at base, 2 to several from a root-crown, the plants leafy at base. Camp 62, that is on Lake Florence road, opposite Lower Hot Springs. c. 6500 ft. (up hill) —[Cont. from bottom p. 447] the whole infrequent. I find, on this trip into the San Joaquin River, only this one station and only a few plants there. There is only a little Corn Lily (Veratrum californicum Durr). Monardella odoratissima the common whitish flowered one of the region, I think I collected it about Huntington Lake, is not abundant but is eagerly eaten by sheep. Swertia [no. 13.229] is not touched by sheep. We gain the crest of the table-

[cont. p. 482]

Shaver Lake, Aug. 14, 1928.
Fresno Co.

481

No. 13,281. Eriogonum nudum var. deductum. Dry, sandy mountain sides under pines in open forest. Cascada, Huntington Lake. c. 6500 ft.

No. 13.282. Sium cicutaefolium Gmel. not This umbellifer grew abundantly in a little marsh at the summit of the road from Big Creek village to Shaver Lake and within a mile of Shaver Lake = Oxypolis accidentalis C. & R.! or thereabouts Note the stem, simple, arising from a fusicle of slender-fusiform roots. 5500 ft.

No. 13.283. Rhododendron occidentale Gray. With 13.282.

No. 13.284. Juncus

nos. 13,285-288 (not used). With 13,282

No. 13.289. Urtica holosericea Nutt.

Plants in an old sandy clearing, 7 to 9 feet h. Shaver. 5300 ft.

482 Pine Ridge, Fresno Co.
Crossman School. c. 4500 ft.

No. 13.290. Lessingia
Corollas lavender.
In a clearing near Pine Ridge sta. Dry soil. 4938 ft.

No. 13.291. Stephanomeria virgata
Sandy open on mountain side near (200 yds.) Crossman store, about 2 mi. from Pine Ridge road stā. c. 4800 ft

No. 13.292. Eriogonum roseum
Fls. cream-yellow. Dry
tall plants, 4 to 5 ft. h.! with
no. 13.291. c. 4800 ft.

No. 13.293. Eriogonum roseum
with 13.292 but
the flowers a little different
color, — straw yellow. c. 4800 ft.

No. 13.294. =A. fascicularis Dene. Asclepias mexicana Bav. c. 4500 ft. Occurs on Pine Ridge below Pine Ridge stā. Plants 3½ to 5½ ft. h. A
part of wasp* is working

* Chlorion ichneumoneum (L.)

Aug. 14, 1928. Crossman School.
Pine Ridge, Fresno Co. c. 4500 ft.

483

on the flowers and I take a spm. This species is in full flower. Asclepias eriocarpa (no. 12.957) is nearly past flowering. Most of the plants have large pods showing and no flowers. See p. 499.

— Below Pine Ridge stā. and Crossman store, a few (about 2) miles, one comes to a fork of the road — the left-hand, direct route to Fresno via Toll House. At this point there is a school.* In an open there is a large colony of Asclepias eriocarpa (same as no. 16,101, Shasta Lake) and a few plants of A. mexicana (13,294). This is an interesting part of Pine Ridge. It is open Yellow Pine ridge type of country: Pinus ponderosa, Libocedrus decurrens; Arctostaphylos patula (on its lower limits and only a plant or two noted), Arctostaphylos manzanita (common), Ceanoth-

* Crossman School, acc. F. M. Sweeley in litt. 1932

484

batia foliolosa (abundant west ward along the ridge); Eriodictyon californicum (Yerba Santa); Quercus Kelloggii (Black Oak band).

I take the right-hand road and continue westerly towards Alder Springs, a road station and resort on north mountain side [small] of → Bald Mtn. (w. of Pine Ridge, c. 4500.

No. 13,295. Cordylanthus rigidus (Bth.) Jepson. Bracts 3-parted into linear segments. Corolla whitish, small, hidden in the heads. Alder Springs, Bald Mt. Open forest. Sandy soil. 4500.

No. 13,296. Pycnanthemum californicum Torr. This mint grew in a half-day large mdw. on Pine Ridge westerly, about 5 mi. from Alder Spgs.* sta. = Corlew Mdw. 4500 ft.

*on Bald Mt.

485

No. 13,297. Mentha spicata L. Colony at Old Auberry, 4½ to 5 ft. h., numerous stems in a cluster or "stool".

No. 13,298. Artemisia douglasiana Bess. Plants 4 to 5 ft. h., the stems simple below, with long simple branches above. Tips of these (from different plants) form the sheet. One branch is more silvery than the other, but the silvery one is younger, less mature! Old Auberry.

— From Auberry I drive down the Clovis road through the low foothills, turn off on the Friant road and make camp in my old camp ground (cf. p. 328 ante, also p. 365, 367) on the margin of the San Joaquin River by the Bridge at Friant. It is a pleasant evening and I have the camp quite to myself. It is

Friant, Aug. 15, 1928 Fresno Co.

so quiet and still that the evening sounds carry. From the village on the Fresno shore I hear the cry of children at play, while across the water three hundred yards I hear from the Indian settlement a melody whistled softly – the cadence rises and falls – now plaintive, now forlorn; now full of sweetness and fraught with hope.

No. 13,299. Juncus macrandus Cov.
Shaver Lake. With 13,282.

No. 13,300. ~~Hemizonia~~ Holocarpha heermannii (Greene) Keck
Hard dry ground.
Rays golden-yellow, about 7, crowded.

No. 13,301. Tribulus terrestris L.
See p. 479. Hard dry ground.

No. 13,302. Eriogonum roseum
Hard dry ground

No. 13,302.a. Heterotheca grandiflora Nutt.

Cont. from p. 497. A. Leucopsis Torr. var. asymmetricus Jones. (No. 13,321).

[Beech Mdw., Aug. 12, 1928.]

Cont. from Bottom of p. 480.
land and take a trail through a series of little meadows to Beech Meadow where Thornton has a camp. It is a fine unspoiled meadow, that is there have been no cattle or sheep on it this year nor last year. I collect here nos. 13,258 – 13,274. We go into camp here. From here Thornton and I walked up the mountain southeasterly to the poison meadow (see p. 465). At this camp one was afforded a good idea of these two old cronies: Ely, loud, raucous, blasphemous; Thornton, quiet, sedate, soft-spoken, rarely profane and, when so, the profanity seeming casual, accidental or not cogent. Thornton is a type of the

old-time Californian harvest hand in the wheat fields. After the harvest was over he drifted north to eastern Oregon for the harvest. On one occasion he went into an old-time dance-hall at Spokan, was drugged by girl entertainers and robbed of his money. For several days he was quite "down and out". He opened a saloon door one day and the proprietor, alone in the bar, called: Come have a drink. He likes whiskey, tells his tale to the man who gives him $4.50 to gamble on shares in the gambling hall back of the bar. He wins; befriends a lone lad "who is waiting for money from his brother", saves him from starvation.

Later at Pendleton he looks up this boy who secures him a job as "dealer" in one of the big games in his brother's saloon, where he makes $40.00 to $80.00 a night. He "beats" his way on trains back to California. — Thornton lives at one of the poor little ranches in the foothills on the road from Friant to the Clovis-Auberry road. His daughter went to the University for two years. As I have worked through the foothills it has sometimes come to me to wonder what sort of people live in the poor ranches. Well, I know as to one.

— This afternoon I drive from Friant, see p. 486, to Visalia; spend the night in a camp; go on next morning to the ranch of [Cont. p. 491.]

Round Mdw., Giant Forest
6400 ft.

No. 13,303. Sparganium angusti-folium Michx.? Leaves narrowly, arising from a fascicle of roots, flat on the upper surface, rounded on the back so as to be almost triangular in cross-section. True aquatic in shallow pond, Crescent Mdw; leaves floating.

No. 13,304. Castilleia miniata Dougl. Crescent Mdw.

No. 13,305. Oxypolis occidentalis C. & R. This umbellifer grew in moist meadow formation. Crescent Mdw. 6700 ft.

No. 13,306. Helenium bigelovii Moist mdw.

No. 13,307. Athyrium This fern grew in the moist mdw. by a log.

No. 13,308. Senecio clarkianus Gray.

Aug. 17, 1928 Tulare Co

—Met Judge Walter Fry who welcomed me warmly. He says that at Crescent Mdw. Drosera rotundifolia flowers only once in two or three years; at Oriole Meadows it flowers every year.

—Cont. from bottom of p. 489. Ernest Dudley; welcomed by Mr. and Mrs. Dudley (Aug. 16). Next day we drove, Mr. Dudley and I, to Round Mdw., Giant Forest (see p. 490). On the way called in at the Britten store to see old friends at Three Rivers; saw Mrs. Geo. W. Stewart at Giant Forest (wife of the Land Office man who has helped me at times), and Judge Walter Fry. Returned to Dudley ranch in the evening; next morning started back to Berkeley.

492

No. 13,309. Oenothera hookeri T. & G. Plants 4 ft. h. By irrigation ditches, Exeter.

No. 13,310. Ambrosia psilostachya DC. Moist valley lands.

This composite grows to be 4 to 5 ft. h. Exeter.

No. 13,311. Centromadia =Hemizonia pungens (H. & A.) T. & G. Moist valley lands, 2 to 5 ft. h. Exeter.

No. 13,312. Wislizenia refracta Engelm. Plants 3 to 4½ ft. h. Along railroad right of way, Traver. 290 ft. alt. This species is occasional along the railroad right of way. On the Fresno - Mendota road it is common in places along the roadways, after one gets out (west) on the alkali plain. It seems as if it were initially

493

along roadways, thence spreading into fields, especially moist ones broken by the plow. It behaves somewhat as Brassica nigra in its invasions. I note this phase of the matter about, that is, north of Kerman. Further west I see it also off the roadways on the alkali plain, sometimes considerable areas of it. It continues as far west as the road station called Lone Willows. It also occurs a few times between Lone Willows and the slough called Four-Mile Slough.* Between this latter point and Whites Bridge I saw at least one colony of it. It occurs near (n. of) Jamesan.

*See vol. 49, p. 46

San Joaquin Valley.

– Hetaerothera grandiflora Nutt. 2½ tall straight stems, 3 to 5 ft. h., are remarkable for their equably leafy character. The stems are densely leafy with ascending leaves, up to the inflorescence: Visalia; Kerman. It is abundant and usually in very rich soil. Also at Rolinda.

– Datura meteloides DC. Kingsburg; Visalia; Pollasky; Friant. Mostly in rich deep soils in cultivated areas. It is, it seems to me, an introduction. I can think of it in no truly wild place. It is an impression that it, at first, in California, was found only about old Spanish settlements, an impression that sticks in my mind.

Aug. 18, 1928. Fresno Co.

– Cucurbita foetidissima H.B.K. Pollasky, Fresno Co. No. 13,313. Suaeda Tulare Co. Railroad right of way, Frazer. Bushes, spreading, 1½ to 2½ ft. h.

No. 13,314. Suaeda with 13,113.

No. 13,315. Atriplex c. 190 ft: Bush-colony, looking like one large bush, but composed of several individuals, 8 ft by 12 ft., 4 to 5 ft. high. (Cont. p. 496.

No. 13,316. Jussiaea californica Jepson. Filling the slough at Four Mile Slough. (See letter of Geo. W. Graves, Oct. 25, 1928.) c. 190 ft: See p. 443 ante. A. fasciculatis Dene.

No. 13,317. Asclepias mexicana Cav. Four Mile Slough. Banks of the Slough. Pepsis formosa (Say) is working the flowers. Cont. p. 499.

These plants have very tall

496

c. 190 ft.

stems, unbranched save at the summit. Plants are frequently 4 to 5 ft. h. here and I measured one cluster 7 ft. h.!

Cont. no. 13,315. This grew on the alkaline plain near Lone Willows road sta. There is very little of it at this point; at least of this size.

Heliotropium curassavicum L., a very large plant like a low mound, 6 ft. by 3 ft., by 1 ft. h. Kerman.

No. 13,318. Cephalanthus occidentalis

with 13,317.

No. 13,319. Polygonum hydropiperoides Michx. Four Mile Slough. A great colony in deep water in the slough. With no. 13,317. c. 190 ft. See p. 443.

497

No. 13,320. Allenrolfea occidentalis Alkaline plain at the slough. Four Mile Slough. c. 190 ft. Bushes 3 to 4 ft. h.

No. 13,321. Astragalus leucophyllus T. & G. = A. asymmetricus Sheld. See p. 486. Many-stemmed, forming a roundish bush about 3 ft. h. Open plain Mendota. c. 180 ft. Silvery young herbage at top like plumes.

No. 13,322. Atriplex ♂ Bushes 6 to 7 ft. h., very broad and rounded, 10 to 20 ft. broad. A large colony near the railroad track, nearly 1/3 the way from South Dos Palos to Los Banos, near Orita station. This looks like A. lentiformis. See next no. for ♀.

No. 13,323. Atriplex lentiformis ♀ with 13,324. See previous no. for ♂.

Dos Palos, Aug. 18, 1928, Merced Co. C. 120 ft.

No. 13,324. Cordylanthus mollis Gray var. viridis Jepson. Salt marshes n. of Dos Palos.

— Allenrolfea occidentalis. Wonderful "forests" n. of Dos Palos; also extensive tule lands.

No. 13,325. Drainage Slough n. of Dos Palos.

No. 13,326. Amaranthus californicus Wats. Plants perfectly prostrate, forming very close mats on moist but not wet bare spots on "little flats" in the tules n. of Dos Palos. ♂ fls.: stamen 1; sepals 2. ♀ fls.: pistil with 2 (or 3) stigmas, the stigmas thread-like but bearing short branches; sepal 1.

No. 13,327. Phleum alpinum L. Cont. from p. 478. 8500 ft. Bench n. dw., Kaiser Ridge, Aug. 12, with 13,327.

No. 13,328. Pedicularis attollens Gray. Cascada.

No. 13,329. Pentstemon. /see p. 241.

No. 13,330. Bromus orcuttianus Vasey See p. 405

No. 13,331. Linanthus. See p. 377.

Addresses. [See also p. 500]

- A. S. Lofberg, Edison Co. Keeper at Florence Lake.
- Pore, Forest Service Ranger at Florence Lake.
- W. J. Walker, Indian, east of Friant, above Ft. Miller. (See p. 500).
- F. E. Sage, Selma, guide in the Sierras and poet, Selma.
- Mrs. Rita M. Lofberg, wife of the Edison Co. Keeper at Florence Lake (Big Creek P.O.)

No. 13,332. Sisymbrium incisum Engelm. = Descurainia richardsonii ssp. incisa See p. 469

No. 13,333. Cucurbita palmata. See p. 469

— Cont. from p. 495. No. 13,317. These insects (Pepsis formosa) are very large, and clumsy in their habits as they work over the flower-clusters. Det. by Prof. E. O. Essig. 3 species

— Cont. from p. 483, no. 13,294. The insect is named by Prof. E. O. Essig, Univ. of Cal.

Addresses. (See also p. 499)

- W.H. Shafer, surveyor and engineer, Selma, knows the back country well - its topography, geology, animals.
- Jess Gould, Mr. & Mrs., hotel-keeper, Selma (Bobbie Gould. Margaret Gould.)
- F. M. Swerley, District Ranger, U.S. Forest Service, Big Creek. "Honorable Rough neck".
- David See, cattleman, met at Lower Hot Springs
- "Uncle Jack" Harkins, sportsman and horseman, met at Lower Hot Springs.
- D. (Dunbar) Thornton, cattleman, met at Florence Lake, home address = Clovis.
- Willie Ely, fisherman, one-time cattleman; traveling with Thornton.
- William ("Bill") Walker, half-breed Indian, met at Lower Hot Spgs.

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- Addresses

- F. M. Swerley, District Ranger, Big Creek. Fresno Co.